Proceedings of ATEE Annual Conference

TO BE OR NOT TO BE A GREAT EDUCATOR

2022

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To be or not to be a great educator

I am pleased to introduce the proceedings of the ATEE 2022 Annual Conference. The world is changing rapidly, and we must rethink what it means to be a great educator. With the pace of change, it is important to know which knowledge is outdated and how to update it. The COVID-19 pandemic and other diseases have closed institutions, and we must find ways to ensure that learning can continue. This includes teaching students who are not visible behind the screens, those who lack screens, those who cannot read, and those with special needs.

War and other conflicts also pose challenges to education. While we may be shocked by the barbarism of conflicts such as the war in Ukraine, we must also consider how to teach the values of culture, dignity, peace, and human life in such situations. It is important to find ways to to teach how to ensure peace even in the face of family loss, invasion, and destruction of our countries.

The issue of walls and borders is often viewed as a solution to problems, but sometimes ignoring problems can have consequences. The war in Ukraine caused the democratic world to be shaken, and some people believed it was only an Eastern European problem, leading to organizations and countries being unsure of how to react. Is it true that it's just an Eastern European problem? This raises the question of how to teach courage, faith, and bravery, like that shown by Ukrainians.

The issue of propaganda and fake news is well-known, but the focus here is on educational propaganda. You may have heard statements like "Finland has no homework but great results" and tried to eliminate homework for students, or that "students will learn better if the learning process is interesting." However, as educators, we know that such simplistic approaches can lead to fragmented knowledge and avoidance motivation. Similarly, while educational technologies can be effective, they come at a cost and require appropriate materials and pedagogies to avoid fragmentism. There are many other such statements, such as the belief that STEM knowledge can solve all problems or that the lecturer is becoming obsolete in the digital age. In light of all this propaganda, how can we encourage scientific thinking and maintain a realistic perspective?

There are many challenges in education, but the solution to these challenges is clear – we need great educators to lead the way. The question is, will you choose to become a great educator or not?

Out of the 128 research presentations made during the conference, this book consists of the 65 best papers. These papers cover a wide range of topics related to education such as teacher education, student learning outcomes, and the use of technology in classrooms. Our intention is that this compilation of papers will provide important insights into the diverse aspects of education and will help in

the ongoing discussion about how to reshape education to tackle the demands of the 21st century.

We extend our sincere gratitude to all the authors who have contributed their work to this book, as well as the reviewers who have provided valuable feedback. We hope that this book will be a valuable resource for educators, researchers, and policymakers who are committed to improving education for all.

Prof. Linda Daniela

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Teachers' Learning Experiences: Transforming Their Professional Activity During COVID-19 Pandemic

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ABSTRACT

The COVID-19 pandemic has brought teachers professional and personal challenges, creating particularly stressful crisis-like conditions for their learning and development. The aim of this qualitative study is to conceptualise teachers' learning experiences that have accompanied the transformations of their professional activity during the COVID-19 pandemic. Narrative interviews of teachers were conducted in Latvia in the spring/summer of 2022. They were coded and analysed according to thematic analysis method. This article entails the results of the first stage of the study.

The study found that teachers' learning experiences during the COVID-19 pandemic are characterised by the paradigm of transformative learning as overcoming. Thematic structure of the learning experiences was developed and comprises 4 themes (dealing with limitations, seeking support from community, learning on the go, drawing conclusions) as well as 13 subthemes, which describe teachers' experiences in rich detail, revealing their complexity and variability.

The article offers conclusions on the conceptualisations of teachers' experiences, discusses support and conditions needed to benefit from the experience and points to the significant role of context, relationships, and dedication for teachers to have beneficial learning experiences accompanying the transformations of their professional activity during the COVID-19 pandemic.

Keywords: COVID-19 pandemic, learning experiences, teachers' professional activity, thematic analysis, transformative learning

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Introduction

Teacher professionalism has been positioned as one of the key factors for quality education (International Commission on the Futures of Education, 2021), recognising the need for collaborative and systematic opportunities for long-term professional learning and development (Darling-Hammond et al., 2017; Hargreaves & O'Connor, 2018). The COVID-19 pandemic has brought an unprecedented disruption to education worldwide affecting more than 1.6 billion learners and their teachers. Teachers needed to adapt their work to new realities of remote learning, dealing with large and unequitable learning losses of their students and changing realities of the epidemic situation (The World Bank, UNESCO and UNICEF, 2021). Teachers' learning and professional development was affected as well.

In Latvia COVID-19 started to affect schools after the World Health Organisation declared global pandemic in March 2020, as due to the declaration of an emergency situation schools moved to working entirely remotely until the end of the school year in June (Cabinet Order No. 103, 2020; Cabinet Order No. 655, 2020). One week of school holidays was the time allocated for preparation. The next school year was shaped by various infection control measures, such as student flow control, the longest period of remote learning lasting roughly half a year – depending on student age group and municipality (Cabinet Order No. 662, 2021). The third school year affected by the pandemic involved prioritizing face-to-face learning while striving for epidemiologically safe environment via routine COVID-19 testing at school, isolating, masking, vaccinated personnel, and hybrid models of learning face-to-face and remotely (Cabinet Order No. 720, 2021; *Law on the Management of the Spread of COVID-19 Infection*, 2020). The unpredictability of the modality of learning due to quarantine was accompanied by resistance to compulsory vaccination by some teachers and further complicated by the full swing of curriculum reform "Skola2030" (Skola2030, 2019), reportedly lagging behind with the provision of textbooks and learning materials. As 2022 draws to a close, although COVID-19 realities influence us less, the pandemic in not yet over.

The COVID-19 pandemic has brought teachers professional and personal challenges, creating particularly stressful crisis-like conditions for their learning and professional development. This crisis is characterised by a rupture in the existing working practices, laying the groundwork for restructuring of the teachers' work. This study aims at conceptualising teachers' learning experiences that have accompanied the transformations of their professional activity during the COVID-19 pandemic.

The theoretical basis of the study has been elaborated in detail in previous publications (Goba-Medne, 2019; Goba, 2019), viewing learning experience from a phenomenological and subject-centred perspective and exploring it as

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a conceptualization of past occurrences that form an individual's subjective perspective in the context of one's lifeworld and guides their future actions. Transformations of teachers' professional activity were examined applying the activity system's model developed by Yrjö Engeström (Engeström & Sannino, 2010), viewing teachers' professional activity as a dynamic cultural system occurring in its particular context (primarily practice based) rather than focusing on competence models as idealised sets of required competencies. Learning experiences were studied through the theoretical lens of transformative learning theory (Mezirow, 2009), which investigates impactful learning that has the capacity of altering a person's frame of reference or "(…) processes that result in significant and irreversible changes in the way a person experiences, conceptualises and interacts with the world" (Hoggan, 2016, p. 71). Four paradigms or ways of understanding transformative learning experiences have been defined in a philosophic investigation by Douglas W. Yacek – initiation, overcoming, discovery and conversion (Yacek, 2017), providing insights into their educational meaning and fostering conditions as well as problematic facets. For the sake of this study, these paradigms or archetypes serve as a lens to apprehend the nature of the learning experiences teachers have gone through due to crisis evoked by a global pandemic.

Methodology

This qualitative study attempts to answer the research questions: How can teachers' learning experiences of transforming their professional activity during COVID-19 pandemic be described? What experiences do teachers describe as conductive (or detrimental) to their learning during COVID-19 pandemic? Narrative interviews (Nohl, 2010) were conducted with schoolteachers in Latvia utilizing maximal variety sampling along with theoretical saturation principle (Strauss & Corbin, 2015). A flexible interview guide included open ended questions that generate rich narratives on teachers' experiences during COVID-19 pandemic (from when they felt COVID-19 started to influence their work up until the time interviews took place). Interview participants include schoolteachers of general education schools of different size, ownership (state, municipality, private), type (elementary school, secondary school, gymnasium) in various locations across the country (urban, rural), comprising teachers of different age groups (30 to 70 years), gender, respective teaching experience (3 to 29 years), teaching in various subject areas (STEM, arts, languages, sports, social sciences, technologies) in various levels of education (elementary, primary, secondary). Participants were recruited via purposeful invitations, referral sampling (or the snowball method) as well as voluntary application and they provided an informed consent approved by the respective Ethical board of University of Latvia.

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As a result, 9 interviews (lasting 26min to 1h 6min) were collected in person and via ZOOM video conferencing platform (May to June 2022) and verbatim interview transcription was performed. To grant anonymity participant names were substituted with a pseudonym (such as Sk1) and other private details were removed. The transcripts were analysed using thematic analysis (Braun & Clarke, 2006) in a reflexive and recursive process (Braun et al., 2019) starting with familiarisation with the data, moving towards generating codes to text segments of shared meaning for the entire data array, grouping codes in candidate themes, revising and mapping themes, defining themes and finally producing the report. Themes and subthemes were developed inductively, searching for patterns through the codes and across the dataset, attempting to incorporate both the complexity and richness of the experiential space it covers.

Results

Analysis provided thematic structure of teachers' narratives on their learning experiences of transforming their professional activity during COVID-19 pandemic. Consequently, the thematic structure comprises 4 themes and 13 subthemes, depicting the complexity and variability of the teachers' experiences of transforming their professional activity in Latvia during COVID-19 pandemic (see Figure 1).
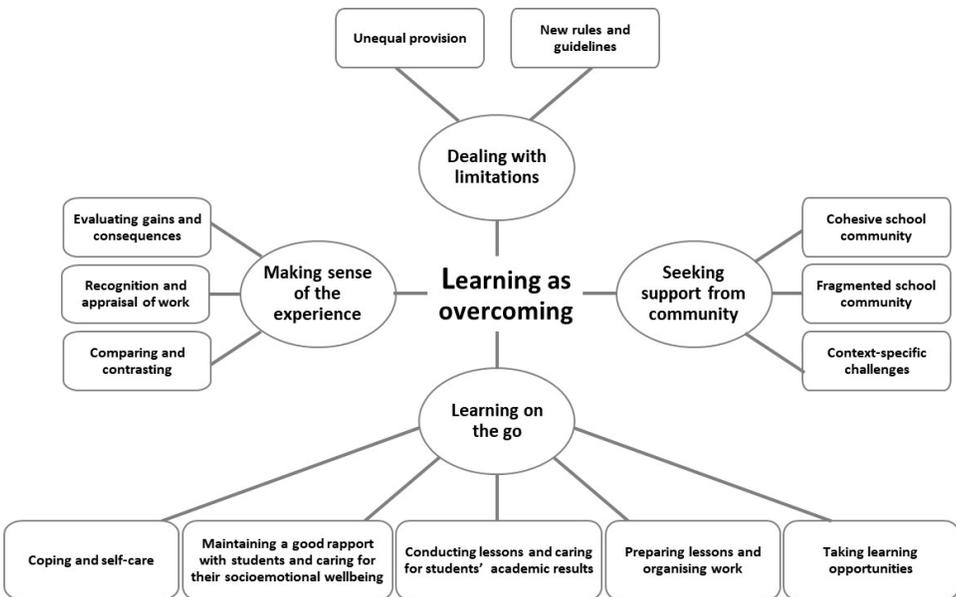
Figure 1. Thematic structure of teachers' learning experiences of transforming their professional activity in Latvia during COVID-19 pandemic

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As a whole, teachers' experiences tell the story of overcoming various challenges in order to perform their professional activity in an uncertain and unstable situation.

Therefore, learning associated with this experience rather takes the shape of work-based problem solving and reflection than exploring new opportunities within formal or non-formal education (such as teacher professional development courses). Participant's Sk3 words illustrate this:

> *And then something doesn't work there, one has no sound, other has no camera, then the teacher has some other problems. So constantly, absolutely every day, you are going through constant changes all the time and you are in constant communication. All the time.1*

Here Yacek's four transformative learning paradigms (Yacek, 2017) come in handy, as it becomes apparent that the overcoming paradigm is dominating and thus becomes the overarching theme of the thematic structure of this study. Transformative learning as overcoming is revealed in 4 main themes: dealing with limitations, seeking support from community, learning on the go, and making sense of the experience.

Dealing with limitations

The notion of limitations was apparent in all interviews, as teachers were adapting to the new realities of crisis-induced remote and hybrid learning. Two subthemes were distinguished.

Unequal provision for both students and teachers affected the initial transitioning to remote and online teaching and learning – it limited the opportunities for teachers to provide interactive online lessons as well as students possibilities to participate in such lessons. Unequal provision was associated with limited capabilities of the available devices, insufficient availability and quality of an internet connection as well as limited access to certain software and website subscription services that not all schools or municipalities had purchased. Teacher Sk11 illustrated it:

> *Well, very, very many socially sensitive issues appeared there, reality – we say, "children have phones". And?! It's possible that one can't do anything with that phone! (…) But the platform he must work on requires a higher quality device for him to be able to engage."*

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1   This excerpt of an interview as well as all the following excerpts are translations from Latvian.

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> *Sk2 told about the circumstances in a rural area: "There was no way, the primary school didn't have such a view at all that there should be online lessons – absolutely and definitely not because of resources, moreover because we have those who live in such a dense forest, there is nothing (no internet) there at all!*

Teachers organised their work with the limited resources at their (and school's) disposal, furthermore, they ascertained the provision of their students and sought to improve it. Technical support was often sought from family members that were more technically savvy. Teachers also discussed issues connected to their working premises and conditions while working from home, such as the need to share space and devices among family members, taking care of their own kids studying from home. Teachers were distressed by the limited availability of teaching/learning aids and resources – not only ones suitable for online teaching, but learning materials were lagging for the implementation of the afore mentioned curriculum reform Skola2030. In addition, teachers encountered the lack of other study resources, such as supply for arts or STEM experiments for students learning from home.

New rules and guidelines were established frequently during the period studied and therefore discussed in several respects. Along with the need to comply to the general schooling principles, the rules and guidelines for remote and online teaching were discussed, criticised as well as anticipated. COVID-19 inflicted safety measures and the associated unpredictability was discussed, especially the unpredictability associated with quarantining and the abrupt transition from face-to-face to remote learning as COVID-19 cases were detected. Teachers also expressed their views on the new rules and guidelines of Skola2030 curriculum reform, recurrently criticising the decision of the authorities to continue implementing the reform in a crisis, Sk5 described her perceptions:

> *The feeling is that you are not just thrown into the water, but just as you reach the edge of the pool, you get pushed back into it! (…) So, you had a stomach operation? – not a big deal, we are supposed to eat porridge today! You're just getting it.*

Some benefits of Skola2030 were highlighted as well, for instance Sk4 said:

> *I have to say that Skola2030 with its curriculum pretty much forces me to wade into fields that I have not wandered into before, really. (…) Well, since I like (doing) it, I don't mind, I also read, search, analyse, collect (information), and so on.*

Several participants admitted they had been bending the rules to achieve what they felt was for the benefit of students, considering that the state of emergency initially allowed for relaxing the learning outcome requirements, Sk4 elaborated:

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(…) I was definitely looking for what works for me and what doesn't work for me! And what suits a particular class, what works for a particular child and what doesn't, and then I think about how to bypass the system! But to be honest, I said that for myself, but to be frank, I also have colleagues who did similarly. They were looking for ways to bypass the system as well! This consumes a huge amount of energy! Because of the awareness of the mission to educate the child.

Local and school-level rules and demands were depicted in opposing views, demonstrating how differently schools tackled the crisis.

Seeking support from community

The role of community was initially not apparent as a central theme in teachers' narratives, however, as participants depicted the availability of support and the perceived appreciation of their work, it became evident that there were distinct characteristics of a cohesive school community as opposed to a fragmented school community and that it influenced their job satisfaction. It is important to mention that the aspects of school culture are aggregated here for the purpose of typification and were not necessarily simultaneously present in all cases. The third subtopic comprises context specific challenges.

Cohesive school community was manifested through a perception of the school leadership as supportive and dedicated, colleagues as an encouraging and supportive team that engage in mutual learning, exchanging ideas and conveying emotional support. Sense of appreciation and job satisfaction was more probable to be expressed in such a community as well as the sense of long-term planning and preparedness to the remote teaching challenges ahead. Representatives of such communities frequently viewed their colleagues as reliable and doing their best in regard to professionalism and concern for students. Utterances of Sk13 depicted such a community:

But the rest of us sat here at school, rehearsed, connected, simulated that lesson – as if I was a student and he was a teacher and vice versa, whether he heard me, or saw what I wanted to show, and so on. We supported each other. Well, yes, it is like that, quite a large part of the collective felt safer at school than at home. Because there were people ready to help at any moment.

Fragmented school community was apparent through a perception of the school leadership as controlling or uncaring to teachers, teachers' perceived isolation and solitude, short-term orientation and survival with respect to the remote teaching challenges ahead, along with negativity among teachers mainly in the shape of venting negative emotions and shared pessimism. Sk6 depicted such a situation:

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> *You stay alone, and you get along somehow, you talk to your colleagues, everything is negative and depressing for them too. There was no support to turn to, to talk to.*

Perceived futility or fruitlessness of cooperation at their respective school was a characteristic as well, Sk11 accounted:

> *It was not important for me to collaborate with someone, because it was rather a waste of time. Because when, for example, there is a meeting about problems and how to solve them, then after 10 minutes all the meetings go "how bad everything is, and we don't have computers, and they don't learn at all, and they don't connect, and they turn off the cameras, and the parents are irresponsible and the parents don't care and it's the parents' responsibility, it's the social service's responsibility" and so on. Everyone is tossing around responsibilities. But there is no constructiveness.*

Sense of underratedness and being neglected was often paired with doubts about other teachers' performance and devotion that were based on personal observations.

Context-specific challenges include shortages of teachers and support staff along with the socioeconomic situation of the local community, schools and classes in threat of closure in contrast to challenges of large class and school sizes and limitations of devoting time to all learners, a statement from Sk4 illustrates this:

> *It was completely clear to me that in [city] I cannot give such assignments, as I said, the children in large classes are not, they are not ready. They haven't managed to learn a lot of things, well at least practically, I think that there are no problems with mathematics, no problems with languages, but design, technologies – where you need to work practically, which, by the way, is the focus now (Skola2030), it is not possible with 30 children in class. Well, a teacher can't provide guidance for 30 children (at once) to learn to crochet properly!*

School type, size, and location (urban, rural) affected the availability of resources and possible solutions. Sk1 depicted a small urban school:

> *Then overall, I'd say we survived that digital experience relatively well as a school, because, what worked well was the fact that we are small and flexible.*

Compulsory vaccination of teachers had a negative impact on some school communities, given that colleagues resigning felt deserted, and if they returned relationships were not what they used to be. Substitution of colleagues was problematic for various reasons. While working from home, one's own family situation affected teachers' work. Teachers recounted how global events, such as the war in Ukraine, affected them as well.

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Learning on the go

Most of the teachers' accounts of learning experiences were about their development through adjusting to the dynamic changes in their work and learning to provide online learning experiences. Five subthemes were generated through analysis: taking learning opportunities; preparing lessons and organizing work; conducting lessons and caring for students' academic results; maintaining a good rapport with students and caring for their socioemotional wellbeing; coping and self-care.

Teachers were *taking learning opportunities* in various ways, predominantly relying on self-directed learning and self-study resources that allowed to direct their professional development according to their needs, capacities, and pace, according to Sk4:

> *There have been courses and, of course, there was mutual exchange of thoughts and ideas among colleagues, but above all I investigate by myself. I search, I read, as I said, the same Skola2030 with the new topics that need to be learned, what courses should I expect there? When I need something, I read, I search, I find and I put it together.*

Several teachers were particularly appreciative of experience sharing workshops and supervision sessions. Participating in professional development courses was generally perceived as having some or limited added value, though teachers were appreciative of the broadened choice of courses due to being conducted online and thus their increased accessibility. Participants reported collecting ideas and materials from social media and their social circle as well as learning from their students and encouraging them to take initiative in lessons. University studies and other studies were mentioned as well.

Preparing lessons and organizing work was taking up much more time than before and involved considerable amount of learning by doing and relentless problem-solving, Sk12 depicted it:

> *Well, the preparation of it too, a lot more searching for material that can be used like digitally. Making all kinds of Kahoot! quizzes about sports and adding something like that, because with that number of hours honestly – you have to be very athletic to physically, let's say, exercise all that. At first, I also tried to exercise along myself, then I realized that I can't do it. Then I just demonstrated, which is also more correct from a pedagogical point of view, that I watch them make mistakes, instead of me exercising a lot and no one else actually doing it.*

Online lesson preparation and planning was described as time consuming and complex, it involved preparing learning materials from scratch fitting to the new teaching modality as well as according to the curriculum reform Skola2030,

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preparing engaging, tailored and personalized online lessons and self-study tasks. Various methodological solutions and timetable variants were developed and tested, including outdoor learning. Teachers reported increased class-teacher duties and extra-curricular work connected both to student attendance and learning results tracking, collaboration with parents, socioemotional problem solving, work connected to COVID-19 testing and tracking as well as keeping track of students learning face-to-face versus remotely during hybrid learning periods.

Conducting lessons and caring for students' academic results involved the challenge of maintaining students' learning discipline remotely, evaluating results, dealing with student cheating and sometimes frivolous attitude towards remote learning, excessive or insufficient parental involvement sometimes resulting as a disservice of doing homework instead of students. There was an apparent consensus on the crucial issue of giving and receiving feedback from students online and remotely. Sk13 depicted the challenge:

> *Well, how to conduct this lesson effectively, so that the students actually work, instead of sitting with their screens off, without a camera.*

Teachers typically maintained multiple communication channels and closely communicated with other teachers as well.

Maintaining a good rapport with students and caring for their socioemotional wellbeing appeared to be important for academic performance. Teachers generally kept close track of student attendance and lesson engagement, strived to maintain a good rapport with students remotely, attended to students' socioemotional wellbeing both individually and on a school level. Sk5 depicted students' challenges:

> *Well, then you understand that some of those children really had extreme conditions for learning. And then the child is saddened that the result is not so good, and then I must reassure them that the circumstances are completely different, they're no longer at school.*

Participants devoted time to students individually and collaborated with parents to help struggling students. Teachers' efforts were sometimes met with incomprehension, negativity, and criticism. They observed deteriorated student social skills after the prolonged remote learning period.

Coping and self-care was crucial for maintaining teachers' working capacity. Teachers reported various effects of remote teaching and the overall tension on their health and emotional wellbeing. They were struggling with time management and with retaining of work-life balance. Several teachers recollected becoming aware of their limits, overcoming perfectionism, and learning self-preservation, for instance Sk5:

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Well, I've always tried to be a very, very nice person, and this remote work showed me, in general, this whole emergency situation, working, let's say it, under triple workload conditions – you have to do it face-to-face, bearing in mind (you may have to switch to) remote learning and then also Skola2030 – I must note, that I'd said this so many, so many times: you know, I feel sorry for myself too! When I had never said that in my life before.

Others were appreciative of their previous experiences and personality traits that helped cope. Respondents reported regenerating through family time, recreation in nature and enjoyable activities. Sense of responsibility towards students, steady pay and acceptance of the situation were aspects sustaining teachers' in their efforts.

Making sense of the experience

Learning and sense-making is what brings an experience its educative meaning. Three subthemes were determined for making sense of the experience: comparing and contrasting; recognition and appraisal of work; evaluating gains and consequences.

Teachers were commonly *comparing and contrasting* as a means to comprehend and navigate the changes. They observed the working conditions of teachers in other schools and countries as well as the dedication and working methods of colleagues and were critical of the quality of some. Sk5 shared her observations:

And then it turns out that you – a couple of teachers – are the kind of bogeys who force the poor child to do something (to study hard remotely) and then there are other teachers who are easy going about it.

There were statements of state officials not matching local realities that were perceived as infuriating and troublesome, Sk11 portrayed it:

Parents were troubled too because they were living in the pandemic as well, not just the education sphere, but they may have lost their jobs and so on. And they say: "But on the TV, it was told you have everything!" And then they (on the TV) say: "The school should give you a computer!" And then those kids go to school and the school responds: "We don't have that computer! There just is none." But the TV told there is! Well, that's it."

Teachers shared their observations about the mental state of their colleagues, Sk12 described:

So many of those colleagues also, I think, became very stressed during Covid (…) I think that many were on the edge, not that they were, they remain there.

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> *They are on the edge of it now. In my opinion. And is it just Covid, well, now the war comes as a bonus.*

Another aspect of this subtopic was validating one's experience through recognizing the similarities in other teachers' experiences.

Recognition and appraisal of work appears to be closely tied to teachers' job satisfaction and overall wellbeing throughout the interviews. Student success and learning motivation was mentioned as one of the key aspects that brought sense of meaningfulness to work along with appreciation and positive emotions from parents and students. It was common to experience negativity from both parents and students as having the opposite effect, Sk6 characterised it:

> *Everyone is stressed and they just don't see you, they don't notice you.*

Another crucial aspect was recognition of work by school leadership and other parties ranging from encouraging words to financial bonuses for achievements at school. Lack of performance-based pay on the school-level along with the perceived overall distrust of teachers' professionalism from authorities and policy makers was perceived as disheartening, Sk4 stated:

> *But I can't work, I don't trust myself, after all these reforms, I can't trust myself anymore, maybe I really don't know how to work?! (…) And a teacher, a subject teacher, a specialist in his field, he can't choose. For him, as I have already said, we do not trust ourselves anymore, we clearly see that these children need something different, but we cannot do it, because we are put in this sort of track, in a frame.*

Evaluating gains and consequences serves as a final step towards making the meaning of the experience. It was commonly agreed that developed digital literacy and learning materials were a great asset along with increased methodological flexibility and adaptability. Some of the teachers discussed what appeared a sense of empowerment and agency, for instance Sk5 told:

> *In a way, those remote studies provided more freedom, because if you feel, if I feel, that more ZOOMs are needed, then I schedule another ZOOM (…). I loved the freedom of being my own boss, now I'm actually still trying to maintain it.*

A common thread was the perception of a stabilised system during remote teaching that immensely eased the job and provided a sense of "the new normal". Some participants acknowledged that they had restructured their professional activity beyond adjustment to remote teaching mode, for instance an experienced teacher Sk4 explained:

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> *It was this huge benefit that art could be taught in a completely, completely, completely, different way. I had not had such an experience for years, and then I was tormented by the question that I still sometimes ask myself: Which art classes are better?*

Teachers admitted the experience had led them to a more student-centred process and taught them to make clearer task descriptions. Overall participants portrayed increased self-awareness along with learning to spare oneself and set boundaries. Increased compassion and tolerance towards students and other teachers was depicted in some cases in contrast to attained irritability and disappointment in others. Sk11 portrayed how he has changed through the years of teaching:

> *If initially I could be a very drastic teacher and say that if it is not handed in 8:00, then 'cmon, the train has left (…). But now at this moment I say it is possible for all of us to learn – sooner or later – that it is possible for all of us to learn and get something done. It is a calmer perception of it all.*

Negative consequences entailed burnout, retreating to self-preservation, considered or performed resigning along with decreased requirements from students.

Discussion and conclusions

This study aimed at conceptualising teachers' learning experiences that have accompanied the transformations of their professional activity during the COVID-19 pandemic. The time frame covered was March 2020 to June 2022 and included periods of remote and online learning, face-to-face and hybrid learning modalities. The 4 themes and 13 subthemes laid out in results section describe teachers' experiences in rich detail, revealing their complexity and variability.

Theme *dealing with limitations* revealed how teachers situate their professional activity and learning in regard to provision and rules, the former challenged by inequality among schools and families, the scale of which was not necessarily discerned by the interviewees themselves. Likewise, the rules applied in particular schools appeared to be moulded by the interpretation of school leadership and of local communities, which not necessarily was reflected in the judgements of interviewees. *Seeking support from community* was a theme that was revealed in the background of the depicted ongoings of teachers, however, it revealed the salient role of context as well. Namely, despite the unpredictability and pressures of pandemic realities, what can be called a cohesive school community could offer considerable strengthening and supportive features. Through the destabilisation and crisis community support can help reorientating

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and finding one's footing. *Learning on the go* is a theme that depicts how teachers' learning resembled constant adaptation and work-based problem-solving, prioritising learning opportunities that offered skills and solutions directly applicable to their professional activity in the school. That shows that in a pandemic crisis and alike problem-oriented work-based professional development that provides an opportunity to practice and analyse working practices along with adaptable, targeted support should be delivered. It was also apparent how maintaining a good mutual rapport, bonding, and maintaining warm relationships online was crucial to students' success as well as teachers' wellbeing and job satisfaction.

Finally, the theme *making sense of the experience* outlined the sense-making journey of interviewees, which involved analysing their observations, receiving feedback and appraisal of their actions as well as drawing conclusions. Most teachers recognised they had not only learned new skills, but they had changed their professional activity and changed themselves in various ways during the timeframe studied. Clearly it takes time to reflect and make meaning of such a complex and lengthy experience, however this process needs dedication and space as well.

The discussed four themes unified by the overarching theme of learning through overcoming challenges depict the journey of getting through an uncertain situation to which the previous experience doesn't offer an immediate solution nor explanation. However, to move figuratively from enduring and overcoming through to growth and empowerment, an intermediate stage is required. Teachers need not only reflect on their experiences, but to recover and regain their integrity, to make closer scrutiny of experience possible. What makes some teachers go through this crisis and experience growth, while others remain in bewilderment and state of survival? What role does the school culture play? Are there personality traits that bolster teacher resilience? How to maintain the quality of life while going through hardships, recover when the hardships are over and experience growth? What support is effective? On the one hand, evidently targeted support is needed to give space for a deep, improvement-oriented reflection with a clear target in order to benefit from the experience, on the other hand, the notion of teacher professional competence embodies the obligation to become aware of the need oneself.

This study doesn't allow for generalisations due to the limited sample, though it points to the significant role of context, relationships, and dedication for teachers to have beneficial learning experiences accompanying the transformations of their professional activity during the COVID-19 pandemic. The data collected in this study may be used to develop a typology of teacher learning experiences to further this line of research. It is suggested to collect a larger sample in future lines of investigation and to analyse the factors that have influenced teachers' professional learning and opportunities for reflection. Themes

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that were developed in this study may help to build context-specific and situational learning and support systems for teachers and guide future research.

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Reflective Writing as a Means Towards Teacher Professional Development

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ABSTRACT

The aim of this study is to present how reflective writing contributed as a means for teachers' professional development in the context of an action research project where a group of teachers engaged themselves on approaching diversity issues in their settings. During the preparation phase, participants were systematically involved in a variety of educational activities and workshops in order to approach reflective writing. At the next phase of the research, they were, thus, asked to carefully observe their contexts and their own practice and keep written records both from important "flash-points" they identified in their classroom and from the anti-bias sessions they conducted. As part of the process, they were invited to reflect on and submit copies of their records. Their writings were then discussed and commented on during feedback group meetings, where all participants shared their views and experiences in order to enrich their understandings. The different research data collected were analysed using qualitative and quantitative content analysis. According to the results, reflective writing proved an effective and powerful means for teacher professional evolution, although a number of significant challenges teachers were faced with were recognised. In order to overcome difficulties, individual and team support proved valuable allies. The small community of learning and practice that was gradually created seemed to have led to participants reconsidering their pedagogical perceptions, in the light of their critical interaction. The results of the study could contribute to the discussion about the significance of using reflective writing for teachers' professional evolution.

Keywords: Action research, Critical feedback, Critical incidents, Critical thinking, Reflective writing, Teachers professional development

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Introduction

In this article we will try to highlight the most important findings of a study concerning the significance of using written records as a means for teachers' professional development in the context of reflective models for education. The study was embedded in a doctoral research conducted from October 2018 to June 2019. Within that context, twelve educators from various backgrounds and educational settings were involved in a collaborative action research project, adopting different roles (action researchers, critical friends, researcher-facilitator)[1]. More specifically, nine preschool teachers were engaged in a project where they attempted to adopt the Persona Dolls (P.D.) approach[2] as a method to manage diversity issues and prevent exclusion in their classrooms. Participants were invited to approach the method as action researchers and try to explore the possibilities and challenges they came across during their involvement in the programme that were relevant to the research hypothesis. They were expected to carefully observe their class and systematically keep written records of both critical events they identified and of the P.D. sessions they organized, all related to the research axes. They were then encouraged to critically reflect on them, also in writing.

Within the framework of the research, they were involved in feedback meetings with the whole group, designed to provide them with theoretical and methodological support. Towards this effort, three other preschool teachers – the researcher as the facilitator and her two critical friends – also took part as members of the research team.

As the project evolved, teachers' writings started becoming more reflective, thus, revealing changes in their educational perceptions and influencing the way they approached their role as professionals. It, therefore, gradually became evident that other issues, equally significant, related to teachers' professional development issues arose and made their exploration important. Among the most prominent ones was the impact of using written records as a means for teachers to reflect on their beliefs, their attitudes and, consequently, on their practice.

This paper is organised in five parts. The present introduction is the first one. In the second part there is a brief review of the relevant literature that outlines

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[1]   The first author contributed to the research project as researcher and facilitator of the action research project.

[2]   The Persona Dolls approach was developed by preschool teachers in Britain and South Africa as a method to counter prejudice and discrimination in school in an effort to implement inclusion and social justice. Using life stories teachers attempt to familiarise children with different aspects of human diversity and though them help them develop empathy, unlearn prejudice and act against discrimination (Brown, 2001; Whitney, 1999). Persona Dolls (P.D.) are special, life-like dolls, with their own personalities used as educational tools by teachers.

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the theoretical context of the study. The third part summarises the methodology we followed, i.e. the purpose and the aims, the research framework and the method. The most important findings are discussed in the fourth part. Finally, in the fifth part, we try to present our main conclusions about how reflective writing, as encouraged in the process of our research project, affected teachers' professional development.

(Re)considering teacher professional development: Teachers as reflective professionals

Research literature emphasises the need for continuous professional development for teachers. Yet, much of the relevant research concludes that the simple presentation of new theories and techniques does not automatically imply their acceptance and implementation by teachers in their classroom (Avgitidou, 2014; Elliot, 1989; Fullan, 2007; Speck & Knipe, 2005; Zeichner & Liston, 2014). Much of the criticism on traditional teacher training is based on the concept that they follow a top-to-bottom model of professional learning, the content of which is pre-planned, predetermined and linearly given by theorists or academicians to all participant teachers (Elliot, 1989). Most frequently, training focuses either on obtaining/improving instructional skills or on familiarising participants with new programmes as forms of adapting existing curricula (Fullan, 2007; Zeichner and Liston, 2014). However, such approaches seem to reveal a prevailing underestimation of teachers' contribution to the enrichment of our knowledge about the educational process (Day & Gu, 2010; Zeichner and Liston, (2014). In fact, it appears that relevant training models, although popular, have rather failed to sustain teachers' professional development and provide appropriate respond to important challenges and dilemmas they meet, at least in the long term (Speck & Knipe, 2005).

On the other hand, reflective approaches acknowledge the value of using professional knowledge to adapt educational practices according to the needs, the special characteristics and culture of each educational context (Altrichter, 2005; Avgitidou, 2014; Fullan, 2007). Zeichner and Liston (2014) argue that if we aim at having teachers prepared to face the various challenges they meet in their everyday practice, we should be ready to address them as active professionals. Schön (1983) supports that professional learning equals reflective practice. More explicitly, we should encourage teachers to reflect on their previous representations and experiences and consider them capable to take decisions about their educational action. According to Elliot (1989)

> (…) the teacher educator must always transmit his or her specialised knowledge as intrinsically problematic (…) In the final analysis the ultimate validation of specialised knowledge about education is that it enables educational

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> *practitioners to discover better solutions to the complex practical problems they confront in realising educational values in action.* (p. 86)

These approaches on teacher professional learning incorporate the notion of redefining the relation between theory and practice. Challenging the belief that theory produced outside school can lead teaching act in a linear and undisputable manner, they focus on establishing a bidirectional link, as they acknowledge the contribution of teachers in critically approaching, exploring and adapting theory through everyday school practice (Day & Gu, 2010; Elliot, 1989; Zeichner & Liston, 2014). Fullan (2007) claims that unless "a culture of learning in context" is established in schools, "no incentive or qualification scheme by itself can possibly carry the day" (p. 292). Similarly, many researchers report that teachers' reflecting on their own practice as well as their students' action seem to have a positive impact on broaden the formers' understanding both on their context and on their own work, arguing that this considerably contributes to their professional progress (Altrichter, 2005; Day & Gu, 2010; Fullan, 2007).

In accordance with the above, relevant research findings show that teachers' involvement in participatory experiential sessions and reflective approaches encourages them to rethink their pre-existing perceptions and even to consider adapting their educational practices (Avgitidou, 2014; Day & Gu, 2010; Elliot, 1989). Zeichner and Liston (2014) claim that "viewing teachers as reflective practitioners assumes that teachers can both pose and solve problems related to their educational practice" (p. 5). This perspective is in line to Elliot's (1991) belief that only through fully and explicitly understanding an educational situation as it evolves can we decide on the appropriate educational (re)action. Therefore teachers themselves can contribute in the introduction of innovative proposals and changes by reflecting on their practice. In this context, teachers take the role of active professionals who use action research rather than cookbook paradigms.

Reflective writing for professional evolution

Many researchers parallel the writing process with the evolution of thinking: Purposeful, systematic writing entails qualities applied in learning strategies, such as recollection, organising, revision, connectedness and selection. As reflective writing is considered a useful strategy to focus on self-practice, it is widely exploited in pre-service teachers training during their academic studies (Avgitidou, 2014; Hoover, 1994). Writing journals, critical events, lesson plans and reflective evaluations are some common forms of relevant training exercises included in contemporary academic curricula. Nevertheless, although, not equally popular, reflective writing can be also seen as a means towards professional

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development for in-service teachers, helping them to focus on and reconsider important aspects of their educational action (Hoover, 1994).

Methodology

The purpose and the aims of the study

The main purpose of our study was to identify the role of reflective writing for teachers' professional development in the context of our research project. More explicitly we tried to find out:

- What does the analysis of the reflective written records teachers submitted reveals in relation to the evolution of their thinking and their ability to reflect on their contexts and their educational act?
- How is the record writing process evaluated by teachers themselves in relation to their professional development?

The research context

The study is part of a wider research that was carried out from October 2018 to June 2019. In the context of an anti-bias action research project, twelve educators from various backgrounds were theoretically and methodologically supported to use the Persona Dolls method as a research hypothesis for approaching matters of diversity and challenging prejudice and discrimination in their classrooms. More specifically, in the research participated nine preschool teachers from different public settings as action researchers, the researcher as a facilitator as well as two critical friends of the latter. The participant teachers were selected through snowball sampling (Mason, 2002). Among the most important requirements were their lack of previous systematic training on either action research or anti-bias education as well as their interest and willingness to commit themselves in the research purpose and process. Both the researcher and her two critical friends were preschool teachers having significant teaching and academic experience on the theoretical and methodological fields involved.

Participation in the research was voluntary. All participants were informed about the purpose, the methods and the procedure of the research and consented to promote its aims by honestly reporting data, following the process and collaborating with the research team. Finally, we were all committed in writing that the anonymity of the participating teachers would be fully respected, only the researcher would have full access to all data and all information shared or published would be used by solely for research purposes.

The research process lasted for almost a whole school year and was divided into four main phases (see Table 1) which included:

- training sessions
- collaborative activities and workshops

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- educational interventions in teachers' settings
- systematic reflective writing
- regular reflection and feedback team meetings
- optional one-on-one support and feedback via phone or email

Table 1. The timetable

October – November 2018	November 2018 – January 2019	January – June 2019	June 2019
▸ Selecting participants ▸ Initial communications ▸ Starting questionnaires ▸ Starting focus group	▸ Training sessions: group activities and workshops related to the theoretical and methodological framework of the research	▸ Educational interventions using the P.D. approach ▸ Observation and reflective writing ▸ Reflection and feedback group meetings ▸ Phone/email support ▸ On the spot visits	▸ Final interviews ▸ Final focus group & evaluation meeting

Introducing and supporting reflective writing...

Among all the activities they participated, teachers were initially involved in a variety of training sessions including experiential workshops and activities. Some of the main objectives of the process were to theoretically and methodologically familiarise them with reflective writing as a means to enhance their understandings. More specifically, they were introduced a) to the logic of critical incidents as tools to gain deeper insight into invisible aspects of their educational context (Woods, 1993; Tripp, 1993) and b) to the importance of recording their reflection on the educational interventions they would implemented as action researchers in their classrooms. As part of the following research phase, teachers were asked to systematically write down forms of:

- lesson plans and evaluation forms for every educational intervention they conducted using the Persona Dolls method as an anti-bias approach
- critical events (Woods, 1993; Tripp, 1993) they identified during their everyday programme, relevant to the research axes (i.e. diversity issues in their setting and anti-bias exploitation of the Persona Dolls method)

Copies of their written records were submitted to the researcher for analysis, while part of the material was discussed during the scheduled reflective/ feedback group meetings, where all teachers, the researcher facilitator and the two critical friends involved, shared their opinions in an attempt to broaden their theoretical and methodological perspectives. To further support teachers' effort to

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approach reflective writing, they were encouraged to ask for extra bibliography or feedback communication via phone or email.

The research material

The material was collected throuhout the research and more specifically from November 2018 to June 2019. It was drawn from various sources, both oral and written, to provide us with the most comprehensive overview and documentation of the issue under study. The data analysed were, therefore, the following:

- The questionnaires submitted by the teachers at the beginning of the research
- The written records they submitted (forms of critical events and educational interventions)
- Teachers' individual interviews at the end of the research project
- The focus group interview at the end of the research
- The researcher's journal

The research method

Action research was adopted as a basic methodological strategy, focusing on the reflective-critical analysis of data emerged through individual and collective reflective processes (Katsarou, 2016; Stenhouse, 1975). We used content analysis as our data was drawn from different sources. Thematic content analysis was used to come up with meaningful, evident-based answers to our research questions (Mason, 2002) as well as to understand the meaning participants attributed to the whole process (Patton, 1990). Quantitative content analysis was used to enrich our understandings by producing necessary measurable results about the frequency and intensity of the concepts that emerged from the thematic analysis (Wilson, 2016).

During the process, audio material was fully transcribed in order to have all our data in the form of a written text. Then, after multiple, systematic reading, the data were grouped into categories that met the principles of internal homogeneity and external heterogeneity (Patton, 1990). Elements of grounded theory were used to reframe our thinking and lead us to new theoretical explanations based on our developing experience (Strauss & Corbin, 1998).

Findings

The participant teachers

The nine participants in the research project were all quite experienced teachers, working in early childhood education from eleven to almost thirty years. At that time they were all teaching in Greek public kindergartens all over Attica. They were all university graduates, five of them holding a master's degree. They

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had never been involved in a similar project before and they had no systematic training in issues related to the research axes. The analysis showed that all of them were interested and willing to participate in the action research process, mainly to enrich their knowledge and skills about the research topic.

Approaching the process...

As mentioned above, during the third phase of the research, teachers were invited to keep written records of critical events and of their educational interventions. More specifically, they were asked – through observing their students in their everyday school life and during P.D. sessions – to spot and write down interesting flashpoints related to the research axes (i.e. diversity issues arising and/ or researching the value of the Persona Dolls method as an anti-bias approach). As far as the interventions were concerned, teachers had to write down the anti-bias lesson plans they designed following the P.D. session approach. To promote reflection on their writings, they were also asked to comment on critical events they identified as well as critically evaluate their interventions after each session they had conducted in their classroom. To facilitate and organise their writing they were given sample forms for both types of writing.

Data analysis shows that most teachers kept systematic records of the forms requested (see Table 2). Seven out of nine submitted at least fifteen forms for each type of record, which was the required for the number of interventions they were invited to carry out. Four teachers submitted more forms while two of them less – mainly due to absence from class or methodological difficulties.

Teachers submitted copies of their papers on a regular basis, although they followed their own schedule, as they could submit them either every week or within a month, so long as they were handed in before our upcoming group meeting. However, as the research progressed, most participants began to send their forms more frequently, often on a weekly basis, requesting, if possible, to receive a more immediate first feedback from the facilitator.

Table 2. Written records submitted and educational interventions made

Teachers	T1	T2	T3	T4	T5	T6	T7	T8	T9	Totals
Critical events	3	17	15	16	16	15	15	19	11	127
Intervention forms (Lesson plans and evaluations)	8	16	16	16	15	16	15	15	13	130
Educational interventions	12	16	16	16	15	16	15	15	13	134

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Challenges and dilemmas

Despite the initial training, writing proved to be a rather demanding process for the teachers. Studying the material revealed that a number of significant issues arose, unsettling participants' work routines while challenging their theoretical and methodological certainties. The most important difficulties they encountered are presented below.

As the project progressed, teachers seem to have realised that they had underestimated the time they needed for writing – both for describing the process/facts and adding reflective comments. In fact, they claim that they often had to try hard to "fit" the process into the already heavy schedule they had every day at school.

> *After a while I understood that it takes more (time) than I first thought. Not only in quantity (…) I mean you have to be concentrated there (…)* (T5, interview)

They also acknowledge consistency and commitment as essential to avoid losing focus.

> *(…) when you are not consistent (with your writings), then it is very easy to lose it (…)* (T1, interview)

Selecting noteworthy elements to write about and comment on often troubled the participants. Dilemmas arose, such as whether the incidents they identified could be characterised as critical, or whether the points they focused on during their educational interventions assessment were well selected.

> *(…) is what I am going to write, say, naïve, after all? And do I have to write something else that I did not see or did not understand or did not identify? (…) There I had the dilemma and the hesitation (…)* (T7, interview)

At the same time, methodological issues emerged. Participants had to familiarize themselves with the use of necessary tools – digital recorders, sample forms etc – to facilitate and increase the validity of the writing process.

> *I found it difficult to record the session in written. I cannot handle the doll, talk to the children, watch everyone's reactions (especially non-verbal ones) and at the same time control everything that happens. I think I will lose important pieces (…) Maybe I need a recording tool (camera, voice recorder, mobile?).* (T8, intervention form)

On the other hand, even when adapting such tools, they sometimes found it difficult to transfer their experience into writing.

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> *When writing the forms, it was difficult for me that, as I had it as an image in my mind, (…) However, in order to bring it all to paper, I filtered it so much that I did not know what to write.* (T9, interview)

Participants partially attributed their difficulty in adapting reflective writing to lack of sufficient or any previous experience in observing and reflecting on both their class and their own practice. Their remarks seem to be confirmed by the analysis and the association of the relevant data (e.g. a positive correlation is revealed between elements of their professional profile at the begging of the research and the quality of the written texts they submitted). T7 characteristically mentions relevant difficulties in reflecting on the critical events she identified as well as on the educational interventions she carried out:

> *I could not evaluate what went well, what did not go well. These questions were very difficult for me. Or my thoughts. I could not, because I did not have them in order. That was where I was blocked (…) self-assessment (…) is a thing that we have not learnt, I have not learnt to do it, to record it. I know in myself if I did something well or I did not, I just always pass it (…)*

Several more teachers shared similar comments either during our group meetings or in our one-on-one communications we had in the meantime. Interestingly, however, they also emphasise that they had not initially realised how challenging it would be for them to respond to the process.

Facing difficulties

Despite difficulties, all teachers were involved in the process of reflective writing. Most of them submitted the required number of forms – some of them even more – trying to be as consistent as possible in the research axes. Although, at the beginning, the quality of both the descriptions and the comments submitted were, in some cases, rather poor, the data analysis shows that, the participants gradually improved their ability to focus and reflectively comment on their writings. They all agree that this was neither a linear nor an effortless achievement. However, they acknowledge – not only during the research but also in retrospect – that their way towards reflection was supported through the action research procedures followed.

In fact, adopting a research approach either by using appropriate tools or by following a consistent and organized, yet flexible, course of action was recognized as significantly helpful, e.g.:

> *I found the audio recorder very useful. Because, during some sessions, I got lost with writing.* (T4, interview)

> *The given form was necessary.* (T2, interview)

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(…) the fact that there was a repetition every week put me in the process of thinking about what I have written and needing to take an extra step which under other circumstances may exist as a thought, yet, would remain a thought. (T8, final focus group)

The fact that there was a commitment was very important. This led to a change of mentality, to a process that (…) I now cannot imagine I won't keep written records. (T3, final focus group)

Along with all of the above, feedback and collaboration were considered the cornerstones in their attempt to first comprehend the significance of reflecting on the educational process observed and then realising the need to adopt it themselves. Data analysis, clearly shows that teamwork meetings, in particular, played a key role in supporting teachers' attempt to interpret their writings by enriching their viewpoint. The researcher's journal is full of examples where the sharing of views turned out to offer the group members a lot of new perspectives and ideas, until then unrevealed to the writers themselves.

(…) comments from critical friends that were made during the meetings, these reflections (…) I think helped me a lot. I mean, maybe it's very important (…) the concerns that arose from our meetings in unblocking some things in order to evaluate them more objectively. (T3, focus group)

Nevertheless, more than feedback, teachers argue that open and collaborative interaction within the group offered them encouragement and empowerment, acting as an antidote to isolation and unilateral thinking.

(…) as soon as feedback meetings took place (…) would go ahead again with confidence (…) if there was no team feedback I might, say, really get stuck and not be able to move on. (T5, focus group)

(…) the fact that we were there and I listened to the difficulties and the conveniences and the way they were handled by (…) the rest of the team was definitely very helpful. Because when you see that ah, I was not the only one who made this mistake or I was not the only one doing it this way etc is inspiring (…)

Between group meetings, the option for feedback on an individual level via phone or email communication also proved to be particularly helpful in facilitating participants to enhance their effort to develop their ability to reflect on their writing.

(…) the fact that I sent you something and I had a feedback within a few hours. (…) written word very much as a means, it stays with me more maybe than oral. (…) it worked very well for me. (T2, interview)

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> *(…) our discussions made me understand exactly and to the point (…) where my mistakes were, think towards the right direction and then made me feel that I can and act alone and make mistakes (…)* (T8, interview)

There also appears to be a relationship between this feeling of support and encouragement that teachers reported receiving in the time leading up to our next group meeting with the finding that there was an increase in the frequency of handouts from mid-survey onwards, which emerged from the analysis.

Developing new skills and understandings

The analysis of the submitted forms (critical events and educational intervention forms) showed that as the research project progressed, teachers gradually exercised their writing skills, evolving the quality of their descriptive texts and their reflective comments. Along with them, they developed further professional skills, such as carefully observing their students and the educational process and focusing on important incidents relevant to specific axes – in this case the research axes.

> *I chose this as a critical event because I think there was a rift in the team. Although all year long we talk and "work" respect for diversity, it seems that was not enough. Stereotypical perceptions remain and are manifested in various ways. (…) I think the team needs to manage what we have discussed once again. I would also like to focus on how the whole team will respond to the issue (…)* (T3, Critical event form, 15/4/2019)

Encouraging them to keep journal notes and exploit them to help themselves think critically about the context they teach seems to have opened up new perspectives on how they perceive their own action.

> *During writing, things came to me that at that time I might have forgotten and not given a basis for. So when I started writing I realised even more things, something that I've never done before (…) I have rarely dealt with observing and writing about my children's attitudes and behaviours (…) Now it's a little more (…) spontaneous. Something I didn't do before in the classroom and it definitely helps me in all my educational part in the classroom (…)* (T5, interview)

Shifting their attention from technical and methodological issues to the use of writing as a means of deepening their understandings on the educational process helped them gain a clearer insight on their own representations and practice. As they argue, they were, thus, led to re-examine and re-evaluate the practices they adopt. T8 comments:

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(…) I managed to reflect on myself and the way I position myself in the class-room, towards the children, on the issues we manage together, on how we manage them. I have a more objective picture of who I am now, right now in the classroom. I became an observer of myself.

Through reflecting on their written records, alternative interpretations arose, while preconceived notions were often revised in the light of new realisations.

The fact that you involve yourself into the process of reflection. That's where writing helps. There you are forced to see what is happening because at the end of the day you may say "I shouldn't have done that. I would do this differently. But it stops there. It stops there, you don't change it after all. (…) You won't change it. Whereas if you have it written, you don't miss anything, you are exposed (…) it is what ultimately makes you see yourself. Against everything (…) And how you are as an educator towards diversity and a programme that is related to prejudices. And how you manage them. (T8, interview)

Changes in their mindset inevitably affected their practice. Exploiting their emerging understandings of their context, role and practice, the participating teachers claim to have reviewed and, consequently, sought to reform their previous pedagogic action by making from minor adjustments to even significant adaptations.

(…) little by little I started to build, to build, to build, to see the mistakes I had made, I do not know how much I succeeded, how much I did not succeed. In this whole process I saw a lot of things. I probably saw things in my class (…) that came out and I would not see them any other way (…) (T3, interview)

While in their submissions clearly focus on issues of handling diversity as well evaluating the use of the research hypothesis to address bias, reflecting in writing seem to have contributed to the development of their ability to assess teaching tools, methods and ideas in a more critical way. Through adopting an action research approach they were involved in the process of reviewing theory in such a way that they started discovering new connections with the reality they experience every day at school and building practice-based correlations.

This was again a new dimension for me, even though I have been involved in action research in the past, during my training. But getting out of it all, you leave it behind. Everyday life is far from the theory and I think this all put me back in this process. The fact that theory is related to practice. And it is up to us not to let it go. (N6, Interview*)*

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It is also considered important that the participants themselves were aware of the process of their self-development and they could even recognise its step-by-step course throughout the action research process. In fact, they argue that it was mainly through reflective writing that they managed to better understand and be able to address their context needs.

> *The course was evolutionary. I realised that (…) it is a thing that is being built day by day. It is built session after session but it is also built with what you do next. I realised that what I was writing during the lesson was not just a recording of what the children were saying but it was something you had to read two or three times, record, delete, rewrite to find out what it was that finally appeared during the session.* (N3 interview)

By the end of the research N3 verbalises a thought about reflective writing that seems to be accepted by almost all participating teachers:

> *My misconception was that writing was just one thing. It was not just a note-keeping, in my opinion. It was a lot of things, a lot, a lot of reflection needed to write. (…) In the process, I realised that this was not just about the programme (…) but it has to do with what I understood from my interventions.* (N3, interview)

According to such an approach, reflection on writing moves away from its use as a tool for the purpose of a topic-centred assessment, highlighting its value as a transformative experience in participants' professional identities.

Discussion

In the context of an anti-bias action research project the use of reflective writing proved to have significantly contributed to teachers professional development by opening up new perspectives for them. The analysis showed that teachers often perceived the writing process as a multi-level challenge. Although at the beginning of the research they were all aware that reflective writing would be an integral part of the research and they were eager to be involved in it, it emerged that implementing it was neither a simple nor a familiar process for them. During their participation in the research project, a number of practical, methodological and theoretical issues arose. Some teachers reported that the whole process was rather demanding and time-consuming, while others identified their difficulty in meeting methodological requirements, such as how to focus on research axes, how to decide on what is important to write about, how to describe experience in writing and how to reflectively comment on their writing.

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To respond to arising challenges and dilemmas various options were exploited. Adherence to an organised and consistent, yet, open and flexible research planning was recognised as helpful for systematizing the work of all participants. Teamwork in the group meetings supported teachers' effort to overcome problems and dilemmas and offered feedback and encouragement. Similarly, individual communication with the researcher who adopted the role of facilitator-critical friend was acknowledged as a valuable choice.

Session after session, teachers devoted more time and effort to adopting reflective writing. Their commitment was fostered by their growing belief that this particular practice offered them prospects and opportunities they did not expect to have when entering the research project. As most of them mention, their initial expectations were mainly limited to exploring the research hypothesis and familiarising themselves with the anti-bias approach. However, they began to realise that their involvement in such a process promoted their professional evolution in a more comprehensive way. More specifically, it was evident that writing, as introduced in the context of this research, promoted opportunities for teachers to:

- challenge and enrich their knowledge and understanding of their students
- observe and reflect on the way they act as professionals
- (re)discover connections between theory and practice
- understand the contribution of reflective writing to supporting and improving the educational process.

It emerges that, even if not intended upon designing the process, the research hypothesis has eventually functioned more as a motive and a vehicle for teachers' professional development, supported by encouraging critical thinking and reflective writing than as an ultimate goal. We recognise that the findings of the study is rather context-limited. However we strongly believe that a larger qualitative action research focused on reflective writing as a means of teachers' professional development would be of great interest.

Conclusions

This study tried to highlight how reflective writing contributed to teachers' professional development within a larger action research project, which focused on evaluating the use of the Persona Dolls method in addressing anti-bias issues. Following the research planning, participants were invited to theoretically and methodologically approach and adopt reflective writing in order critically focus on the research hypothesis. As part of the process they were requested to observe their context and their pedagogical action – both during the educational interventions they carried out using the Persona Dolls method and during everyday life in the classroom, identify critical events or other noteworthy issues, somehow relevant to the research axe, to take written notes and to try to critically reflect on

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them in writing. Although participating teachers faced challenges and dilemmas they claim that the support provided has considerably helped them to overcome them. Among the most important supportive elements they acknowledge were teamwork during the regular group feedback meetings as well as individual feedback given as an option by the facilitator via phone or email. Through observation, reflecting on their writings and exchanging views and opinions with the rest of the research team, teachers were led to critically think about their pedagogical perceptions and reconsider their practice. We believe that the above findings could enrich the dialogue on the contribution of reflective writing to teachers' professional development, especially in collaborative action research contexts.

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Knowledge Building: A Good Way to Teach Educational Research Methodology

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ABSTRACT

Educational research skills are a relevant issue to education professionals. Knowing how to investigate makes it possible to generate knowledge to guide educational interventions and evaluations/assessments. An important aspect is to decide on the focus of training to develop research skills, both specific (e.g. formulating a research problem, collecting data, analysing data), and cross-cutting (working collaboratively). Knowledge Building (KB) pedagogy is a coherent approach to teach resarch skill. KB encourages sutdent assume the responsability to carry out collaborative process to build conceptual artefacts. The purpose of this communication is to train students in educational research skills applying the Knowledge Building pedagogy supporting by Knowledge Forum (KF). This platform offers students and teachers a collaborative workspace where ideas supported by evidence can be shared, discussed, negotiated and improved. A comapartive pretest-posttest design was applied to analyse whether students perceived improvements in their educational research skills. Likert scale questionnaires were applied to collect the data. The participants were 51 students enrolled in a course about educational research in Higher Education. The results show positive changes in the student's perception between the beginning and the end of the course. Improvements in the teaching of educational research based on Knowledge Building Pedagogy are discussed.

Keywords: Collaboration, Educational Technology, Educational Research, Knowledge Building, Research Skills

Introduction

Knowing how to research in the classroom is important for teachers (Valter & Akerlind, 2010). Research is understood as a systematic, methodologically controlled and transparent process with the aim of generating and using new

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knowledge (Colás & Buendía, 1998; Creswell & Gutterman, 2021). Knowing how to research means knowing how to articulate a series of skills to answer research questions (Colás & Hernández, 2021): knowing how to recognize areas in need of research, reviewing the state of the matter, applying and combining procedures and techniques for data collection and analysis, reflective and communication skills. A professional who masters these skills can know and generate scientific knowledge that guides educational practices. Teachers can conduct research on their practices to improve their students' learning circumstances (Engelmann et al., 2016), and may also use methods to assess educational outcomes (Holden et al., 1999). However, unlike PhD studies, in undergraduate degrees few credits are allocated for training in research competences (Lambie et al., 2014; Jorgensen & Duncan, 2015, Petko, 2020). This means that students have few learning experiences that allow them to have quality training in educational research. This explains studies on the perception of students regarding the value of the subject in educational research. These studies indicate that students from Educational Sciences in Higher Education often consider research skills to be worthless for their professional future, and therefore they turn out to be ineffective in conducting research (e.g. Rodríguez-Chirino & Gutiérrez-Braojos, 2021; Akerlind, 2008, Ponterotto & Grieger, 1999).

Another important aspect is the relevance of the training approach. Under the umbrella of European credit, teaching methodologies place at the center the idea of learning by doing with others, coherently integrating moments for reflection and improvement of the actions and ideas developed in a topic (Gutiérrez-Braojos et al., 2020). According to this, educational research interventions have been directed to (Gutiérrez-Braojos et al., 2021):
- Attendance at specific research conference to learn what and how experts in the educational field investigate;
- Courses aimed at training in specific educational research skills (e.g. searching for information, writing and discussing research papers);
- Student participation in the activity of research groups carried out by expert research groups.
- Empower students to make groups with their peers and carry out their own research projects while receiving support and guidance from the teacher.

These educational proposals are based on socioconstructivist approaches versus traditional reproductive content teaching. The Knowledge Building pedagogy is consistent with the ideas proposed in the previous section. This socioconstructivist pedagogy aims at empowering students in the construction of their ideas on a topic or knowledge theme (Scardamalia & Bereiter, 1994; Zhang et al., 2009; Van Aalst & Chan 2012. The KB is based on the idea that students who exhibit high levels of epistemic collective agency achieve higher levels of collaborative achievement (e.g. Gutiérrez-Braojos et al., 2019; Strauß & Rummel, 2021;

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Scardamalia & Bereiter, 2021). This involves engaging students in collaborative activities such as establishing common learning objectives in educational research, identifying research needs, negotiating which research problems are most relevant, inquiring, discussing and developing ideas on how to conduct educational research, making decisions about possible designs, procedures and techniques to carry out their research, as well as finding the best way to share the findings. In summary, students trained according to the KB pedagogy collaborate to improve ideas on how to face and carry out educational research. Knowledge Building pedagogy is often implemented through blended modalities, i.e. by combining online and offline teaching activities (Arce, 2022). For this purpose, the Knowledge Forum platform is often used. A technological artefact for collaborative and creative work with ideas (Scardamalia, 2004). The software offers a virtual space in which students can share, discuss and organise data, ideas.... in notes that are linked together. The KF allows any type of file to be attached.

Overall, training in educational research is key for education professionals. The Knowledge Building pedagogy empowers students to assume collective epistemic agency (Yang et al., 2020). This communication aims to carry out an intervention from the KB pedagogy to promote the collective epistemic agency and assess the self-efficacy perception of students to carry out an educational research. In this sense, high levels of collective agency are expected to be related to high levels of achievement in learning research competencies.

Methodology

In this study, a comapartive pretest-posttest design was applied to analyse whether students perceived improvements in their educational research skills. In particular, various questionnaires are applied to participants at two points. The first in the first two weeks at the beginning of the course, and the second during the last two weeks of the course (see Table 1).

Table 1. Variables, Data collection instruments, and application moments

	Moment 1	Moment 2
Instruments	Questionnaires-Likert	Questionnaires-Likert
Variables	Research Competence Collective Agency Starting point	Research Competence Collective Agency

Participants

The participants are 51 students enrolled in the 2nd year of the education degree program at the University of Granada who participated voluntarily in this research. They participated in an educational research subject for 16 weeks

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according to the KB pedagogical principles to advance in the collective understanding on educational research topics and carry out a research on an educational problem of their interest. The students worked in a hybrid scenario supported by the Knowledge Forum platform (Scardamalia, 2004). This required training sessions during the first two weeks with the aim of training students in the KB principles and the use of the KF platform. This study is part of research project (see section: Aknowledgments). This research project involving human participants was reviewed and approved by Research Ethics Committe from the University of Granada.

Instruments

Students voluntarily responded to a battery of questionnaires in two different moments. In this communication we collect the results of 2 of the questionnaires applied at the beginning of the course, and at the end of it:

- Questionnaire of self-efficacy in educational research (Holden et al., 1999). This one-dimensional questionnaire is widely used ($\alpha = .99$). This questionnaire is made up of 9 items based on a 5-point Likert scale with values ranging from "1" to "5", "1" means "I can't do anything" and "5" means "I can do it completely". This questionnaire measures the extent to which students feel confident to carry out skills relevant to the educational research competence, for example, "Design and implement the best possible data analysis strategy for the study of a specific aspect of the educational practice".
- Questionnaire on collective agency (Zhang et al., 2019; Zhang et al., 2021). This recent questionnaire consists of three dimensions. The first dimension "collaboration and sharing ideas, CS" consists of 10 items ($\alpha = .97$), the second dimension "Team Consciousness, TA" of 6 items ($\alpha = .98$), and the third dimension "collective efficacy CE" consists of 3 items ($\alpha = .95$). These items are based on a 5-point Likert scale with values ranging from "1" to "5", "1" means "my opinion does not represent anything to me" and "5" means "totally represents my opinion". Some items in the questionnaire are: "When working in group, I think it is important to share ideas and learning resources (CC)"; "When I have not understood the point of view of my group members, I have actively asked (CG)"; "Even if we encounter difficulties, we can complete the learning tasks of this course well (EG)."
- Questionnaire of questions on omen variables: basic knowledge to carry out an educational research, value of the subject for the professional future, difficulty of the content, interest or motivation for the subject content, achievement expectations in learning, achievement expectations of high grades, emotions transmitted by the subject, expected learning attitude. These questions were answered with a 3-point scale whose labels depend

on the items. For example, for the item "value of the subject for the professional future", 1"" means null value, "2" moderate value, "3" high value.

Data analysis

Various analyses have been carried out in this study. For the analysis of the questionnaires of collective agency and research competencies, comparative analyses have been carried out between moments "1" and "2" using the non-parametric test of W, adding the size of the effect. Subsequently, a Cluster (Kmedias) analysis has been carried out. For the analysis of the questionnaire of omen variables (starting point) a percentage analysis was applied. For the analysis, several Rstudio packages have been used to analyze the data and elaborate the graphs.

Results

Analysis of the intervention benefits through questionnaires: collective agency and educational research competence

Descriptive statistics have been used to analyze the data obtained with the records of continuous activity on the platform, questionnaires on collective agency, and self-efficacy in educational research.

The statistical values have increased at the end of the course compared to the beginning. The non-parametric test W has been applied. The differences between the two moments are significant ($p < .000$) showing a large effect size in both variables.
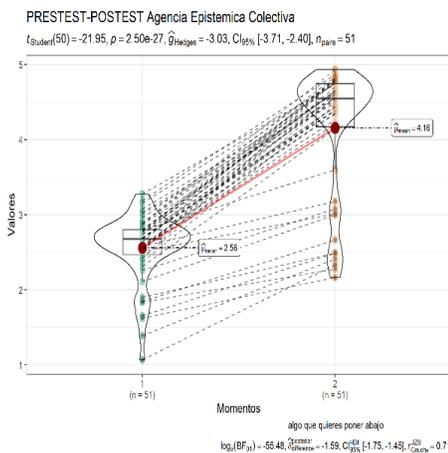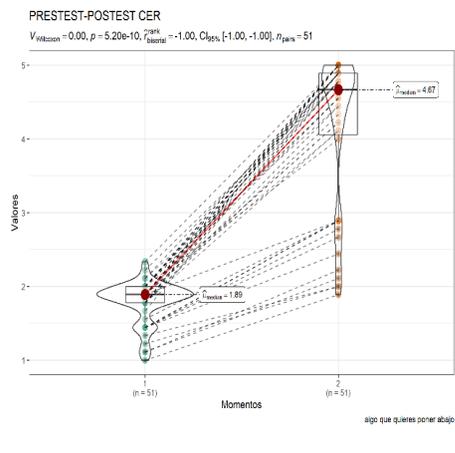
Epistemic Collective Agency   Self-Efficacy in Educational Research

Figure 1. Students' perceptions of team awareness in two moments

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The figures show that students improve their perception for the dimensions of collective agency and skills to carry out educational research. From the graphs, a positive and significant relationship between the collective agency and the research competences is also interpreted. That is, improvements in collective agency could be related to improvements in educational research competence.

The graphs also indicate the transitions of the students between the beginning and end of the course. Student scores do not vary in the same way for all participants. Especially at moment 2 it is observed that the participants are divided into two groups. A group (with a small number of cases) shows scores somewhat lower than their peers. The most obvious case is scientific competence.

Cluster Analysis

The results of a cluster analysis show two groups of students (Figure 2). On the one hand, a cluster of 12 students presents low scores in collective agency and educational research competence. This cluster has been called "students with high resistance to learning". On the other hand, a second cluster made up of 39 students presents high scores in the variables that comprise the collective agency and in the educational research competence.
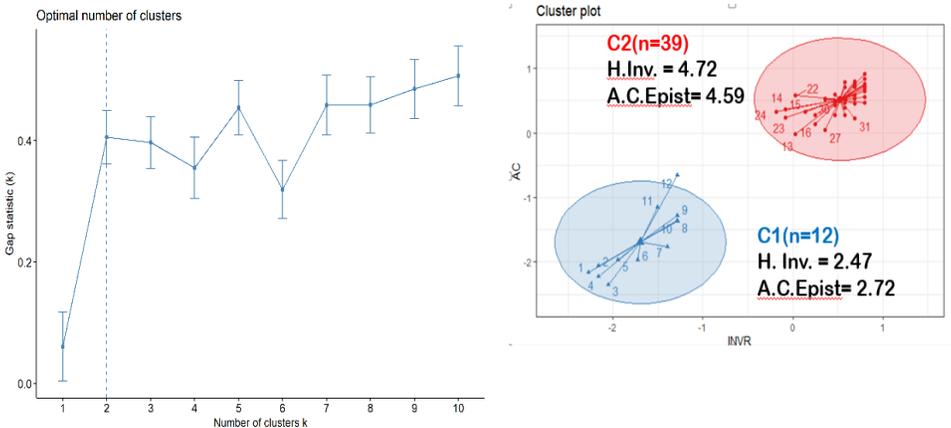
Figure 2. Number and representation of Clusters

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Analysis of the omen variables: perceptions at the beginning of the course

In order to understand the reasons that justify both Clusters, pre-intervention omen variables have been analyzed: previous knowledge about educational research, interest in the content, perceived difficulty... (See Figure 3).
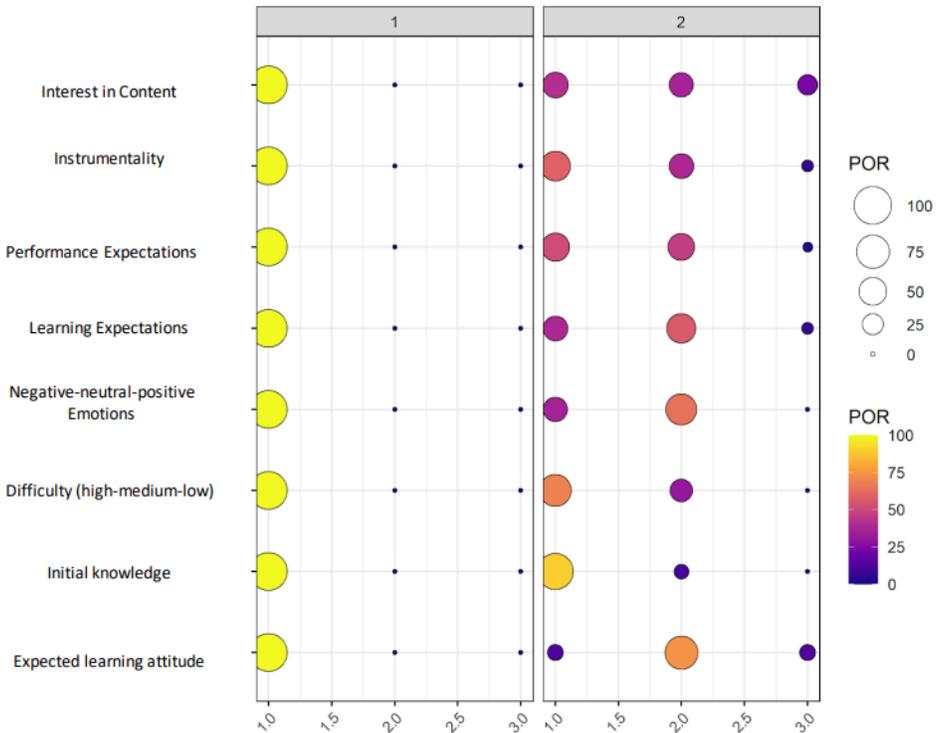
Figure 3. Students perceptions at the beginning of the course according to clusters

The results show that both clusters are similar when it comes to recognizing not having previous knowledge, the high difficulty of the subject, and experiencing a lack of positive emotions towards the subject. Cluster 2 presents a higher percentage of students who score moderately on motivational and emotional variables, showing expectations of achievement in both performance and learning despite the perceived difficulty. In addition, cluster 2 stands out for having a high percentage of students who state that they would have an active attitude to learn the subject.

Discussion and Conclusion

In this communication we present the partial results of a broader work (R + D + i project). The results show that the KB has generated an improvement in collective agency and skills in educational research.

In addition, two clusters of students have been found in this study. They differ from each other according to the level of collective agency and self-efficacy to conduct educational research. The first cluster consists of a small number of students. This cluster is characterized as having achieved a moderate development of skills in educational research at the end of the course and presenting low scores in collective agency. The second of these clusters is composed of the majority of students. This cluster is characterized by high scores in collective agency and skills for educational research. These results coincide with previous studies concluding that levels of collective agency can explain levels of educational attainment (Zhang et al. 2021; Gutiérrez-Braojos et al., 2019), especially when the work methodology requires collaboration with others to improve ideas, and carry out research, as is the case with this study.

In order to understand the reasons that justify both Clusters, pre-omen variables prior to the intervention have been analyzed. The results show that, regardless of the cluster of belonging, the students do not have any knowledge prior to the subject to carry out an educational research. Likewise, another considerable number of students consider this training in educational research to be alien or not very relevant to their profession. However, in cluster 2 made up of students who manifest a greater collective agency and competencies in educational research, a larger group of students who manifested an active attitude in the subject is observed.

In conclusion, recognizing the limitations, the results of our study lead us to affirm that:

- Students are able to progressively take collective responsibility for their learning when given the opportunity.
- Empowering students to assume this responsibility generates improvements in transversal and specific competences in the majority of students.
- Future studies should test the implementation of KB in longer periods to train future teachers' capability of reflecting on the action in their classrooms (experience of 3 months, there are few credits in educational research).

This study has had a relatively short duration for the time a student needs to adequately develop educational research competences. This duration is a mandatory condition of our higher education context. Therefore, we believe that other studies of longer duration that do not have these limitations could obtain even better results.

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Reflection and Feedback as Predictors of Directed Development of Assessment Competence

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ABSTRACT

The assessment is part of the complex profile of teacher competencies that supports the development of teachers' and students' generic and professional competencies. The paper focuses on formative assessment, i.e., the approach to assessment as learning and assessment for learning that takes place during the learning process, which ultimately contributes to self-regulated learning. This paper aims to determine if there are changes in the use of formative assessment in the classroom. For this purpose, Biology teachers participated in reflective learning-based professional development.

In this action research, reflective learning was applied in learning communities. The learning process consisted of acquiring theoretical knowledge about formative assessment, applying what has been learned in the classroom, and (self)analyzing video recordings of the lessons according to the formative assessment representation form. The analysis provided (internal) feedback on progress and aspects for improvement as a starting point for a new cycle of reflective learning.

The initial recordings of the lessons showed that formative assessment needs improvement. The results indicate that professional development in formative assessment varied among teachers. One teacher was found to make steady progress during professional development, while other teachers were found to have sporadic and incoherent changes. We believe that the improvement of the professional development model should include explicit incentives for teachers to implement phases of self-regulated learning during professional development.

Keywords: assessment as learning, assessment for learning, formative assessment, online learning community, professional development

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Introduction

Assessment is an important aspect of the teaching process. This complex process includes monitoring, assessment, and evaluation. Monitoring to assess the success of the learning and teaching processes allows for formative assessment. An assessment approach to learning is used when student learning is monitored and assessed throughout its duration and when teaching is targeted and improved based on these results. On the other hand, when students approach self-assessment, i.e., when they monitor and modify their learning to achieve the learning goal, it is referred to as assessment as learning (MZO, 2017). Both approaches result in feedback (Yan et al., 2021) that has a positive effect on student achievement (Yin et al., 2008) because it shows them how to improve their learning (Bennett, 2011). At the same time, teachers also learn how to improve their teaching. Both approaches require the use of the metacognitive dimension of knowledge to achieve self-regulated learning (Vizek Vidović & Marušić, 2019).

Although the formative assessment and summative evaluation have been present in Croatian education for a long time, approaches to assessment for learning and assessment as learning (including assessment of learning, which has a summative character) have emerged only in recent years. With the introduction of new subject-specific and cross-subject curricula and guidelines for the assessment of the learning process and reaching the education outcomes, professional training as well as the overall professional development of Croatian teachers requires significant changes. Unlike instructional programs that prescribe the topics to be taught in a particular subject to a particular class, the curriculum approach enables teachers' autonomy in choosing and modifying how they will achieve and assess the predetermined outcomes.

Although teachers are required to use both assessment approaches, they should implement them because of the many benefits they have in reaching the mandated outcomes of the subject curricula and the curriculum expectations for cross-curricular topics. Formative assessment promotes conceptual understanding and acquisition of knowledge at higher cognitive levels because it uses open-ended questions, interactive, and collaborative activities (Yin & Buck, 2019). It facilitates students' cognitive engagement and contributes to their understanding of the content being learned (Gikandi et al., 2011). It also increases motivation, improves student learning, and contributes to the objectivity of summative evaluation (Harlen & Deakin Crick, 2003). The effectiveness of formative assessment depends on how teachers implement it in the classroom (Yan et al., 2021). Vingsle (2014) describes formative assessment as a complex process that is difficult to incorporate into classroom practice, and its successful incorporation depends on personal, i.e., teachers' beliefs and attitudes, and formative assessment knowledge and skills (Heitink et al., 2016). It is continuously improved through professional development (DeLuca et al., 2019), and psychological and

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practical support is essential for teachers to effectively play their role in implementing formative assessment (Yan et al., 2021).

Formative assessment may include posing questions and discussion, observation of various activities, note taking, use of various formative assessment techniques, and peer assessment (Yin & Buck, 2019). The aim of the professional development in this action research was to systematically help teachers improve their knowledge and skills in using formative assessment. In addition, we wanted to make teachers aware that formative assessment is an important component of constructive alignment.

Biggs and Tang (2014) emphasize that constructive alignment implies the alignment of goals, activities, and assessments. This requires the teacher to "create a learning environment that encourages students to engage in these learning activities and assesses student performance against the intended learning outcomes" (p. 97). The setting of the objective at the beginning of the lesson as the standard by which the success of learning and teaching is judged, the practice of giving students specific feedback on their activity, instruction that guides and prompts students to self-assess, and the use of assessment questions at the end of the lesson were examined for the achievement of the objective in analyzing the lessons. The extent to which teachers ask questions that encourage students to think and show them what they are still missing to reach a certain level of understanding was examined. In addition, the extent to which teachers encourage students to express their understanding of the content in their words and record it independently and concisely was observed. These activities help to achieve the objective of the lesson while also serving to assess learning. The extent to which teachers teach students how to approach learning and how to solve problems, and the extent to which they encourage students to verbalize their learning (metacognitive teaching and use of metacognitive knowledge and skills in the learning process) were also observed. Finally, the extent to which students were encouraged to monitor their progress and assess their learning was observed. Reflective learning about formative assessment in the context of learning communities, implementation of learning in classroom practice, and analysis of video recordings of the lesson for (self-)reflection to guide further professional development should have enabled the acquisition of the teacher's content pedagogical knowledge (Shulman, 1986) which includes knowledge of learners, teaching, and curriculum in addition to knowledge of content (Ball et al., 2008). Formative assessment is part of numerous educational reforms around the world (Birenbaum et al., 2015) and it is essential for effective professional development (Bennett & Gitomer, 2009), highlighting the need for its improvement. Therefore, the aim of this paper is to determine if there are changes in the elementary school Biology classroom related to the use of formative assessment in a six-month video-based online professional development course based on reflective learning.

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Methodology

The study was conducted during the 2020/2021 school year as part of the "Professional development of teachers for improving elementary students' learning outcomes in science and mathematics" project. Four teachers teaching elementary school Biology were observed for the study. In this study, the names of the teachers are presented with initials.

Changes in formative assessment practice were caused by reflective learning (RL), which is shown in Figure 1.
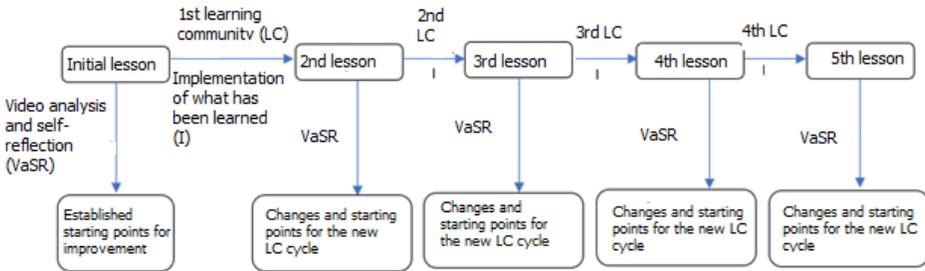
Figure 1. Cycles of reflective learning during professional development

Video recordings of lessons were analyzed using the OZON form (cro. Obrazac za opažanje nastave, Teaching Observation Form, Bezinović et al., 2012). This form describes and evaluates classroom activities divided into six categories: classroom atmosphere, lesson structure, student involvement and motivation, individualization and differentiation of teaching, teaching metacognitive skills and learning strategies, feedback, and formative assessment. From the entire form, features related to assessment for learning and assessment as learning were extracted for this study (the features can be seen in the results section in Table 2).

Based on the analysis of the video recordings, both the researchers of the project and the teachers themselves conducted the reflection on the lesson. After the analysis of the initial lesson using the OZON form identified the starting points for improvement for each teacher, the first lesson followed. Then, the teachers implemented what they had learned in the classroom practice. The lesson was re-recorded, and the analysis of the video recordings was done again using the OZON form to identify the changes compared to the previous lesson and to define the starting points for a new cycle of reflective learning. The same system was applied until the last, fifth lesson. A total of five lessons from each teacher were recorded and analyzed, and four learning communities were held with the topics and outcomes listed in Table 1.

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Table 1. Topics and outcomes of learning communities

Learning community	Topic	Outcomes
1st	Assessment regarding the objective	▸ Predict the importance of defining the objective in the assessment process. ▸ Plan the assessment regarding the objective.
2nd	Feedback	▸ Analyze the conditions for constructing specific feedback. ▸ Plan teaching to enable students' independence in creating internal feedback.
3rd	Concept map – teaching and assessment technique	▸ Use the concept map as a technique in the teaching and assessment process.
4th	Learning by solving problems	▸ Plan the teaching of Biology while simultaneously achieving metacognitive teaching using problem-solving tasks.

In the research, the ethical aspect of the research was fully respected. Considering that the method of observing classes the researcher will requested the written consent of the parents of the students and the principal of the school, in addition to the written consent of the teacher. Teachers were provided with protection of privacy and confidentiality of data. In the analysis and interpretation of the research results, instead of their names, labels were used to distinguish the research participants. At the same time, specifying the exact data of the institutions where the research was conducted was avoided. Upon completion of the research, the participants were informed about the results of the research.

Results

Features of teaching in the formative assessment that need to be improved

The analysis of the initial lesson revealed that not a single teacher states the objectives, i.e., the outcomes, at the beginning of the lesson as a measure for assessing her teaching and the students' learning (Table 2). It is also evident that not a single teacher explains the criteria by which students can assess their own activity and progress concerning the set objective, nor do they use these criteria to highlight progress and learning. Only one teacher did not prepare questions or assignments to check students' understanding and performance in class, while the others used them to a lesser extent to give students specific feedback on their work (Table 2). Another common feature that needs improvement based on the analysis of the initial lessons is the lack of use of metacognitive knowledge and skills that form the basis of the assessment-as-learning approach. None of the

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teachers taught students how to approach learning or encouraged students to verbalize the steps they used in their work (Table 2). Only one teacher encouraged her students to monitor and review their work and evaluate their activities and progress. Since the same teacher did not set an objective for students to evaluate against, this feature was also rated as needing improvement. The other features listed in Table 2 were not observed in all teachers, so they are also rated as needing improvement.

Changes in the features of formative assessment through professional development

The analysis of the initial lesson was followed by a learning community and the topic was *Assessment regarding the objective*. The analysis of the video recording of the second lesson, in which the teachers had to implement what they had learned, showed progress compared to the initial lesson (see Table 2). In terms of learning community outcomes, most changes were expected in the shaded and italicized features in Table 2. Since no significant changes were found compared to the initial lesson, the next learning community was organized with the topic of *Feedback*, which followed up on the first lesson. After that, the third lesson was recorded, which we also analyzed. Table 2 shows progress in the objective setting in the second lesson (only one teacher states the objective, but to an insufficient extent in the sense that she states it at the beginning of the lesson but does not relate it to self-assessment). The same teacher (VŠ) improved her assessment for learning practice in the third lesson because she stated the objective of the lesson, provided specific feedback regarding the objective and prepared questions to check students' understanding and performance. Teacher OZ only explained her assessment criteria in the third lesson, emphasized students' progress and learning, and used questions to check students' understanding and performance. Thus, in the third lesson, progress in instructional features related to assessment for learning was noted compared to the previous two lessons for teacher OZ. She asked students to assess their activity and progress, but this was rated as an inadequately observed feature due to the lack of presentation of the objective. Features that did not improve even in the third lesson were those related to metacognitive teaching (teaching students how to approach learning and/or solve specific tasks) and the application of metacognitive knowledge and skills (students describing and explaining the steps they use in their work). For students to use or practice applying metacognitive knowledge and skills, teachers must organize lessons that set the stage for this to happen. All teachers use questions that promote higher-order cognitive processes to a greater or lesser extent in all three lessons, but all challenge only the cognitive level of understanding and application without problem-solving. Teaching students to learn the content of Biology through problem-solving, in addition to achieving the objective defined

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by the Biology curriculum in terms of developing metacognitive knowledge and skills, is an aspect that the subsequent learning communities have sought to improve.

Table 2. Teaching features in the analysis of the initial recording that need to be improved, the analysis of the second and third recorded lesson after the implementation of what has been learned during professional development, and the progress made regarding a particular feature

Features of a particular assessment approach	Teacher 1st (initial) lesson				Teacher 2nd lesson				Progress IRT the 1st lesson*	Teacher 3rd lesson				Progress IRT the 2nd lesson
Assessment for learning	JM	OZ	VŠ	IK	JM	OZ	VŠ	IK		JM	OZ	VŠ	IK	
The teacher clearly states the objectives of the lesson (learning outcomes).	−	−	−	−	−	−	+/−	−	↗	−	−	+	−	↗
The teacher provides specific feedback to students.	+/−	+/−	−	+	+/−	+/−	−	+	↔	+/−	+/−	+	+	↗
The teacher explains his criteria for assessing students' work and achievements using specific examples.	−	−	−	−	−	−	−	−	↔	−	+	−	−	↗
The teacher emphasizes the progress of the students and their success in learning (and not their shortcomings).	−	−	−	−	−	−	−	+	↗	−	+	−	−	↔
The teacher has prepared questions or tasks to check the students' understanding and achievements in class	+	+	−	+	+	+	−	+	↔	+	+	+	+	↗
Assessment as learning														
The teacher asks thought-provoking questions (which stimulate higher-level cognitive processes).	−	+/−	+/−	+	+	+/−	+/−	+	↗	+/−	−	+/−	+	↙

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Table 2. Continued

Features of a particular assessment approach	Teacher 1st (initial) lesson				Teacher 2nd lesson				Progress IRT the 1st lesson*	Teacher 3rd lesson				Progress IRT the 2nd lesson
Assessment for learning	JM	OZ	VŠ	IK	JM	OZ	VŠ	IK		JM	OZ	VŠ	IK	
The teacher directly teaches the students how to approach learning, solving certain tasks, or practicing.	–	–	–	–	–	–	–	–	↔	–	–	–	–	↔
The teacher encourages the students to express in their words how they understood the content being taught.	+	+	+/–	+	+	+	+	+	↗	+	+	–	+	↙
The teacher asks the students to describe and explain the steps they use while solving a task.	–	–	–	–	–	–	–	–	↔	–	–	–	–	↔
The teacher encourages students to monitor and check their work (e.g., to spot and correct mistakes, and check the solution they have reached).	–	–	–	+	–	–	–	+	↔	–	+	–	+	↗
The teacher asks the students to evaluate their work and progress.	–	–	–	+	+	–	–	+	↗	–	+	–	+	↔
The teacher encourages the students to independently take notes and organize the content being learned (e.g., by highlighting the main concepts or creating presentations).	+/–	+	+/–	+/–	+	+	+/–	+/–	↗	+	+	+/–	+	↗

* Symbols and abbreviations: no progress (↔), progress (↗), regression (↙), IRT – in relation to; JM; OZ; VŠ; IK-teacher's initials

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The third learning community focused on *concept maps* as a teaching and assessment technique. In choosing this topic, we were also motivated by a conversation with teachers about formative assessment during the second learning community. It was determined that the main causes of difficulty in implementing formative assessment were lack of knowledge, over-involvement of the teacher in lesson preparation, lack of time during the lesson to use the method, and students' perception that they value assessment more than feedback. The third learning community served to increase knowledge about formative assessment. It explained how concept maps can be used for both assessment and instruction. The analysis of the representation of the features and the possible progress after the implementation of what was learned in the third learning community are presented in Table 3. In the features related to the assessment of learning, if we consider all teachers together, progress consists only in the emphasis on progress and success in the work. This feature was improved in teacher VŠ compared to the previous lesson, while teacher OZ had already adopted this feature in the previous lesson.

In the features related to the approach of assessment as learning, the most significant change was observed in the direct instruction by the teacher on how to approach the solution of certain tasks. This feature was only partially represented by three teachers, as it only referred to the explanation of how to complete the concept map without relating it to the objective, in the sense that they used the map as a technique that leads to the adoption of a defined objective and the verification of the adoption of the same objective. Although the concept map allowed teachers to monitor and review students' work and to independently capture and organize learning content, it did not fully contribute to assessment because there was no verbalization of learning progress as a conscious activity that trains the use of metacognitive knowledge and skills in the learning process. This feature was only partially present in one teacher because the objective was not defined as a standard against which students could more easily identify and define their progress (Table 3).

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Table 3. Teaching features in the analysis of the fourth and fifth recordings after the implementation of what had been learned during the professional development and the progress made regarding a particular feature

Features of a particular assessment approach	Teacher 3rd lesson				Teacher 4th lesson				Progress IRT the 3rd lesson*	Teacher 5th lesson				Progress IRT the 4th lesson*
Assessment for learning	JM	OZ	VŠ	IK	JM	OZ	VŠ	IK		JM	OZ	VŠ	IK	
The teacher clearly states the objectives of the lesson (learning outcomes).	−	−	+	−	−	−	+	−	↔	−	−	+	−	↔
The teacher provides specific feedback to students.	+/−	+/−	+	+	−	+	+	+/−	↙	+	−	+	+/−	↔
The teacher explains his criteria for assessing students' work and achievements using specific examples.	−	+	−	−	−	+	−	−	↔	−	−	−	−	↙
The teacher emphasizes the progress of the students and their success in learning (and not their shortcomings).	−	+	−	−	−	+	+	−	↗	+/−	−	+	−	↙
The teacher has prepared questions or tasks to check the students' understanding and achievements in class.	+	+	+	+	+	+	+	+	↔	+	+	+	+	↔
Assessment as learning														
The teacher asks thought−provoking questions (which stimulate higher−level cognitive processes).	+/−	−	+/−	+	+/−	−	+	+	↗	+	+	+	+	↗
The teacher directly teaches the students how to approach learning, solving certain tasks, or practicing.	−	−	−	−	+/−	+/−	+	+/−	↗	+/−	+/−	+/−	+/−	↙

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Table 3. Continued

Features of a particular assessment approach / Assessment for learning	Teacher 3rd lesson				Teacher 4th lesson				Progress IRT the 3rd lesson*	Teacher 5th lesson				Progress IRT the 4th lesson*
	JM	OZ	VŠ	IK	JM	OZ	VŠ	IK		JM	OZ	VŠ	IK	
The teacher encourages the students to express in their words how they understood the content being taught.	+	+	−	+	+	+	−	+	↔	+	−	−	+	↙
The teacher asks the students to describe and explain the steps they use while solving a task.	−	−	−	−	−	+	−	−	↗	−	−	−	−	↙
The teacher encourages students to monitor and check their work (e.g., to spot and correct mistakes, and check the solution they have reached).	−	+	−	+	+	+	+	+	↗	+	+	+	+	↔
The teacher asks the students to evaluate their work and progress.	−	+	−	+	−	+	−	−	↙	−	−	−	−	↙
The teacher encourages the students to independently take notes and organize the content being learned (e.g., by highlighting the main concepts or creating presentations).	+	+	+/−	+	+	+	+	+	↗	+	+/−	+	−	↙

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In the last learning community, we emphasized *learning through problem-solving*. Also, during the learning community, we explained the use of the *flipped classroom* in teaching Biology. The flipped classroom concept assumes that learning at lower cognitive levels occurs through independent work at home and learning through problem-solving at school (Bergmann & Sams, 2015). The material that enables students to remember the relevant information they need to solve the task is selected by the teacher, who designs assessment methods for learning and assessment methods as learning that occur both in independent learning at home and in the classroom at school. The flipped classroom was offered to allow teachers more time to organize learning through problem-solving in the classroom and to allow students to practice using metacognitive knowledge and skills, thereby strengthening their ability to use assessment as learning.

The changes in the features caused by the last learning community can be seen in Table 3. In the characteristics related to assessment for learning, there was some progress only in teacher JM. She provided feedback to the students on their work and highlighted their progress. Teacher OZ regressed in her teaching compared to the previous lesson, while the other two teachers showed neither progress nor regress. In the features of assessment as learning, it was observed that all teachers asked questions at a higher cognitive level due to the use of problem-solving learning. Neither teacher showed progress in teaching students how to approach problem-solving. The teachers told students how to learn in class but did not instruct them on how to approach problem-solving or how to apply what they learned to a new problem. They also did not ask students to explain the steps they used to solve the given problem and did not encourage students to monitor their progress.

Discussion

The research conducted shows that implementing formative assessment in the classroom is not an easy task, as Yan et al. (2021) state. Yan and Brown (2021) stated that the practice of implementing formative assessment is far from satisfactory. The analysis of initial recordings related to the use of formative assessment in learning and teaching also indicated a need for improvement. The reason why teachers did not use formative assessment is due to its complexity and the fact that assessments for learning and assessment as learning were introduced only recently in the Croatian educational system. However, this intention was not accompanied by changes in teachers' professional development, which was still traditional. The usual practice of professional development in Croatia amounts to teachers attending professional meetings, organized for a large number of teachers, where they receive only theoretical knowledge with some examples of good practice. Implementation of what is learned in the classroom and subsequent reflection,

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according to the teachers involved in our research, is generally completely absent. In contrast to common practice, the professional development we organized was characterized by continuous support in introducing the expected changes in the classroom. According to Leahy and Wiliam (2012), support included providing knowledge about formative assessment, providing examples of teaching with formative assessment, and providing constructive feedback. In addition, our professional development included collaborating to provide teachers with opportunities to discuss, reflect, and receive feedback from their colleagues about their teaching methods (Heitink et al., 2016). Professional development in formative assessment should allow teachers to try out what they have learned, reflect together, and revise their practice concerning what they have learned (Borko, 2004). Although all of this was included in our professional development, the results showed that implementing formative assessment is a challenging process and that the teachers who participated in the study only partially accomplished this.

The key elements of formative assessment are defining explicit learning goals and success criteria, providing feedback to students on their performance, self-assessment, peer-assessment, teacher-student collaboration, interpreting evidence of expected progress, and using the information provided by formative evaluation to improve teaching and learning (Trumbull & Gerzon, 2013). In our research, we observed assessment for learning and assessment as learning listed in the OZON form (Bezinović et al., 2012). According to the changes in the features listed in Table 2 and Table 3, no changes were observed during the period of development in terms of continuous development. Features that improved in one lesson (recorded as the presence of the feature in at least one teacher or the presence of the feature in a larger number of teachers) remained the same in the next lesson or showed a decrease in the sense that fewer teachers used it in class. For example, the explanation of the criteria for assessing one's work and the students' performance based on concrete examples occurs only in teacher OZ in the third lesson (Table 2) and again in the fourth lesson (Table 3), while in the last lesson, it does not occur for her or the other teachers. A clear statement about the objectives of the lesson was recorded only by teacher VŠ. In her case, it was partially recorded already in the second lesson and fully from the third lesson onward. This teacher showed a clear improvement in the assessment for learning in the fourth lesson, which was maintained in the last lesson as well. Improvements in assessment as learning in the third lesson were not recorded. Towards the end of the training (4th lesson), progress is also evident in this assessment approach. VŠ is also the only teacher for whom we observed continuous progress in both assessment approaches during the professional development training. For other teachers, we have sporadic and incoherent changes with no observed continuous progress in improving some features in the last lesson (JM), with no changes (IK, where many features were present in both assessment approaches in the first

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lesson), or a situation where there is progress in the third and fourth lessons and then a regress in the last lesson (OZ).

Vermunt and Endedijk (2011) point out that teachers respond to innovation in different ways. Some focus on improving their teaching performance in the sense that they immediately apply what they have learned, while others want to understand how what they have learned changes their basic teaching principles and understand why and under what conditions what they have learned works in their practice. Teachers need time to reflect on their teaching practice and revise and adapt their instructional routines to what they have learned (Ruiz-Primo & Furtak, 2007). In addition to teachers' positive attitudes toward formative assessment and their willingness to implement it in their teaching, a stimulating school environment and school policies that provide ongoing support for teachers to implement this important aspect of teaching are needed (Yan et al., 2021; Yan & Brown, 2021).

Vermunt and Endedijk (2011) emphasize that there are teachers who do not focus enough on their learning when it comes to professional development. They have difficulty setting goals and are cautious and hesitant to introduce innovations into practice. This may also explain the results of our study.

What we noted earlier in the analysis of the initial lesson, and further noted in the analysis of subsequent lesson recordings was the teachers' lack of knowledge about how to teach students to use metacognitive knowledge and skills. Although assessment as learning is fundamentally metacognitive, a different approach to assessment also requires using the metacognitive dimension of competence to *learn how to learn.* Apart from encouraging their students to acquire metacognitive knowledge and apply metacognitive skills, teachers must simultaneously develop metacognitive competencies themselves in the process of professional development. This means that teachers should use the results of their efforts to improve their teaching (Hattie, 2015), which implies assessment for learning. At the same time, they should develop a habit of assessment as learning. This means that they should set a specific goal for their professional development and monitor changes and, if necessary, change the path leading to the achievement of the defined goal (Labak, 2022). Our professional development intended to break down the complex process of formative evaluation into smaller parts and implement them in smaller steps in the Biology classroom. According to Leahy and Wiliam (2012), this prevents teachers from reverting to their previous practices after introducing new ideas. We received additional support towards the end of the professional development when we suggested the use of the flipped classroom to teachers. With its settings, the flipped classroom allows for both the application of assessment approaches and the change in overall teaching practice needed to effect change in formative assessment (Trumbull & Gerzon, 2013). For two teachers (VŠ and IK), the use of the flipped classroom led to no changes, for

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one teacher it led to some changes in approach to assessment as learning (JM), and for one (OZ) it led to a regression in teaching performance (Table 3, 5th lesson). This result shows that it is difficult for inexperienced teachers to plan and implement flipped classrooms. Complex changes such as formative assessment are difficult for teachers to design and implement in the classroom. We believe that it would be easier for teachers if they were given detailed examples of how to design a lesson in which the principles of formative evaluation are followed. The possibility of bringing about change by using such ready-made materials while teachers are in the stage of becoming independent and learning formative assessment represents the direction in which this research will continue.

Conclusions

The professional development described in our research resulted in changes not only in formative assessment but in overall instructional practice. In this study, we focused only on observing changes in instructional features related to assessment for learning and assessment as learning. Since no single teacher fully achieved the changes we observed, but only on some features, we can conclude that they were in the process of change. However, for more comprehensive changes, it is necessary to invest more time and effort for them to be noticed in the classroom.

Although the analysis of lessons was conducted for reflection and self-reflection to identify new starting points for improvement, it was the researchers who determined the aspects that needed improvement based on the analysis of all teachers' lessons. It is possible that some teachers themselves did not recognize this need, but saw it as something they already use, already know, or can easily incorporate into their teaching practice. In addition, no explicit planning of self-regulated learning via formative assessment was required during the professional development. In the professional development preparation phase, there was no incentive to set learning goals and strategically plan the path to achieve the goal. In the performance phase of professional development, there was no incentive for self-reflection, and in the reflection phase, there was no incentive for self-assessment and self-regulation of one's practice. Therefore, in addition to learning theory, implementation, analysis, and (self-)reflection of teaching, the professional development of formative evaluation should include an incentive for teachers' active participation in professional development in the sense that development is approached as self-regulated learning.

Some of the teachers pointed out the need to be suggested how to achieve the expected changes because they were often not able to find appropriate solutions on their own. For this reason, we think that it would be good to give concrete suggestions on how to conduct classes following the goals set. Once teachers

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master these approaches, they can be encouraged to find their solutions. In our case, we did not provide teachers with ready-made solutions, which resulted in the expected changes being only partially realized. Of course, we do not believe that ready-made solutions should become common practice, but only a transitional phase in the introduction of new, complex teaching approaches for which more time needs to be allocated.

The research was largely conducted at the time of the coronavirus epidemic (COVID-19), due to which female teachers had to adhere to strict epidemiological measures (e.g., maintaining social distance) in the classroom. Thus, in addition to the usual problems related to teaching and its changes, they had to face constraints that did not support the achievement of the established criteria. All of this may have contributed to the limited introduction of the planned changes.

Aknowledgment

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Pedagogical Entrepreneurship in Teacher Education Curricula. Comparison of Latvian and Finnish Teacher Education Programs

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ABSTRACT

Earlier research has shown that teachers do not feel sufficiently prepared to develop entrepreneurial competences in the classroom, both theoretically and practically, and that the lack of pedagogical entrepreneurship competences hinders the development of entrepreneurial skills in the learning processes. The aim of this study is to analyse the extent to which entrepreneurial skills are emphasised in current teacher preparation programs and to identify differences between Latvian and Finnish educational programs. Curricula and course outlines from five teacher education programs in two different contexts were analysed. Deductive qualitative content analysis was based on 14 pedagogical entrepreneurship components identified in the previous studies. The results indicate that there are major differences between the programs how entrepreneurial skills were emphasised in the curricula and course outlines. In the data from Latvia, 10 from 14 components of pedagogical entrepreneur were acknowledged fully or partly at least in one of the four programs' curricula and course outlines. In addition, four components were not identified in any of the programs' curricula. In contrast, in the Finnish teacher education program, all 14 components of pedagogical entrepreneurship were acknowledged fully or partly in the analysed curriculum and course outlines. This bears consequences for what kind of opportunities to learn pedagogical entrepreneurship students have during their teacher education studies. Based on the research findings, more attention should be paid to entrepreneurship competences in teacher education curricula.

Keywords: entrepreneurship competences, entrepreneurial skills, pedagogical entrepreneurship, teacher curricula, teacher education pedagogy

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Introduction

During the last few years, there have been changes in the use of the latest technologies, digitalization, socio-economic equality, understanding of the importance of ecology, and labour market processes (Gouvernement du Québec, 2021), which led to shift in demand of education and the competencies required in the teaching profession have also changed (Fullan, 2020). The changing socio-economic situation affects all areas of life, and today entrepreneurial strategies in the context of education are a global phenomenon that emerges from politics and are an important starting point for the study of entrepreneurial skills in the context of pedagogy (Dal et al., 2016). Although the development of entrepreneurship competences has been relevant for many years, there is still no consensus on what the elements of entrepreneurship competences are (Slišāne & Rubene, 2021) and how they fit into the educational context. One of the priorities of the European Union (EU) is to develop entrepreneurship education in teacher education (GHK, 2011), because teacher education is not fully integrated into all national strategies and does not promote continuous professional development of teachers (European Training Foundation, 2010).

It is recommended that the development of competencies should primarily start from teacher education programs (Correia et al. 2010), because teachers are a vitally important factor in the progress of students' entrepreneurial skills (Akyürek & Şahin, 2013; Gardner, 2013; Hannula, 2011). However, previous research has shown that teachers do not feel sufficiently prepared to develop entrepreneurship competences in the classroom – both theoretically and practically (Slišāne et al., 2021; Gustafsson-Pesonen & Remes, 2012), and the lack of pedagogical entrepreneurship competences hinders the development of entrepreneurial knowledge, skills, and attitudes in the learning process (Gustafsson-Pesonen & Remes, 2012). To prevent this, it is essential to promote teacher education students' understanding of entrepreneurship competences (Silva, 2013) by improving pedagogical entrepreneurship during their studies.

Pedagogical entrepreneurship consists of knowledge, skills and attitudes to make the teacher more capable of successfully adapting to changing events, to be more autonomous, to form cooperation outside the classroom, school, local society, to show initiative, to be persistent, to notice opportunities and use them, to pool and combine resources to solve problems, to create strategic visions, to take responsibility, as well as to work in a team to achieve common organizational goals (Slišāne et al., 2022).

Theoretical framework of pedagogical entrepreneurship

Although the importance of generic skills, such as entrepreneurship competences, has been emphasized both in educational policy discourses and in practice of higher education (cf. Tuononen et al., 2022), there are still uncertainties

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about pedagogical entrepreneurship (Slišāne & Rubene, 2021; Haara et al., 2016). Pedagogical entrepreneurship is a relatively new concept in teacher education in most countries, including Latvia. Term pedagogical entrepreneurship has been used and researched among Finnish scientists, mostly in the context of students' entrepreneurship competences in order to brainstorm business ideas and teacher role as facilitator (Deveci & Seikkula-Leino, 2016).

Even though the term pedagogical entrepreneurship is not a widely used concept, it is a compilation of three long-known and studied concepts – competences, pedagogy, and entrepreneurship. Thus, this term emphasises that teachers need to have both entrepreneurial and pedagogical competencies (Slišāne, 2021). A systematic review of the entrepreneurship competences in higher education shows that development of it brings several benefits to students (Bacigalupo et al., 2016). For example, entrepreneurship competences help an individual to develop various aspects of personality (attitude, knowledge, skills). It promotes the implementation of business initiatives (Ismail et al., 2018) and promotes a creative atmosphere, cooperation, differentiation of the learning environment (Dal at al., 2016).

Pedagogical entrepreneurship demonstrates how teachers can use their entrepreneurial competencies to manage their professional lives in and out of the classroom. The pedagogical practices that teachers use play a key role in developing entrepreneurial skills among their pupils. To achieve the goal of entrepreneurship education, i.e., an ability to develop the learner's entrepreneurial skills, teachers themselves must actively possess entrepreneurial skills and apply it in their teaching and learning activities (Toutain & Fayolle, 2017; Slišāne & Rubene, 2021, Slišāne et al., 2021, Joensuu-Salo et. al., 2020).

The results of the recent literature review (see Appendix 2; Slišāne et al., 2022) indicate that pedagogical entrepreneurship consists of 14 components. These components portray an ideal teacher who has entrepreneurial competencies (see Appendix 1; Slišāne, 2021; Slišāne & Rubene, 2021; Slišāne et al., 2022). The competencies are proactivity, strategic vision, flexibility, knowledge for effective pedagogical activity, attracting and using resources, professional reflection, professional determination, creating added value, effective communication, social innovations, risk-taking, problem-solving skills, leadership, and professional autonomy. It follows that entrepreneurial teachers are socially motivated individuals who are innovative, cooperative, proactive, thoughtful, present in their work, knowledgeable, goal-oriented, resourceful, tolerant of risk, focused on self-improvement, open to various opportunities and professionally manages the teaching content, methodical work.

Pedagogical entrepreneurship reflects the ability to recognize opportunities and resources to use opportunities and act. It also includes the ability to effectively implement innovative ideas, motivate students to think critically

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and creatively, constantly seek new innovations, and development opportunities in the field of education, create compelling technology-based projects in and out of the classroom, and attract the necessary resources and assistance to adapt curricula, learning materials and learning tools for changes in a rapidly changing environment (Neto et al., 2017; Khorrami et al., 2018). Teachers who possess pedagogical entrepreneurship are socially motivated, innovative, collaborative, proactive, think about possibilities, are present, knowledgeable, fully committed, resourceful, risk-taking, visionary and pursue professional development (Keyhani & Kim, 2020). These features help them create an environment that fosters learner initiative, ideas, encourages experimentation, individual and social responsibility, and makes connections between life outside school and the content to be learned at school (Hietanen, 2015). As a result of pedagogical entrepreneurship, students' academic success is promoted (Turulja et al., 2020) and teacher professional development, individual achievements, confidence, and job satisfaction (Ho et al., 2020; Chawla & Lenka, 2015; Hietanen, 2015; Alipour et al., 2011; Engelen et al., 2015; Kuratko et al., 2005).

The results from earlier studies indicate that teacher education students think that they are sufficiently prepared to be able to further develop their entrepreneurial competences. However, their readiness to teach entrepreneurial competences to others is significantly lower (Slišāne et al., 2021). It should also be noted that there is a strong correlation between students' entrepreneurial competences and their readiness to teach entrepreneurial competences to others (Slišāne et al., 2021). These results are in a line with the idea that there are still some ambiguities concerning learning pedagogical entrepreneurship (Haara et al., 2016). Thus, more research is needed in clarifying the pedagogical entrepreneurship in teacher education, especially, what kind of learning opportunities for pedagogical entrepreneurship students have during their studies.

Research questions

In this study, the aim is to explore how the components of pedagogical entrepreneurship (Slišāne, 2021; Slišāne & Rubene, 2021; Slišāne et al., 2022) are represented in teacher education programs (specifically in the intended outcomes) in the Latvian and Finnish teacher education systems. Our specific research questions are:

1. To what extent are entrepreneurial skills emphasized in curricula and course outlines of the current teacher preparation programs?
2. What kind of differences can be detected between Latvian and Finnish teacher education programs?

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Context

In this study, curricula, and course outlines of five teacher education programs from two different contexts are analysed. Four of the analysed teacher programs are from the Latvia and one program is from Finland.

In Latvia, teacher education is provided at four universities and three academies including programs of pedagogy, diversity in pedagogical solutions, educational sciences, preschool education teacher, social pedagogue, teacher, career counsellor, youth specialist, education, sport specialist, sport sciences, special education, religious pedagogy (Užule, 2020). As a general education pedagogue, with the exception of a preschool education pedagogue, can work 1) individuals who have higher pedagogic education and relevant subject teacher qualification, 2) individuals with higher education in the field of science corresponding to the subject and teacher's qualification, 3) individuals who have acquired study program related to pedagogy within the higher education study program in the amount of at least two credit points or at least 72 hours, 4) individuals with a master's or doctoral degree in education or pedagogy and the scientific work developed to obtain it is related to the content and didactics of the subject (Rules on education and professional qualifications necessary for pedagogues and procedures for improving the professional competence of pedagogues, 2018). In this study, the following programs were selected second-level professional higher education program "Teacher", professional bachelor study program "Teacher", professional bachelor's study program "Elementary education teacher", first-level professional higher education study program "Preschool Teacher".

In Finland, teacher education is provided at eight universities including programs of class teacher education, subject teacher education, home economics teacher education, craft teacher education, special education, and kindergarten teacher education. Finland does not have a detailed national curriculum for teacher education (Cao, 2021; Tirri, 2014). Hence, the eight universities have autonomy in organising their own teaching and research activities. In this study, we focus on one of the Finnish class teacher education programs. Class teacher education consists of two degrees; students complete a first-cycle higher education degree (Bachelor's; 180 credits) before completing a second-cycle higher education degree (Master's; ETCS 120 credits). It follows that all class teachers have a Master's degree in educational science (ETCS 300 credits). This degree qualifies to serve as a classroom teacher and as a pre-school teacher. Class teacher education curriculum includes studies in educational sciences and multidisciplinary studies in subjects and cross-curricular issues taught in basic education (ETCS 140 credits, including teaching practice, thesis, research methods), compulsory minor subject (ETCS 60 credits), optional studies (ETCS 75 credits) and orientation studies (ETCS 25 credits, including language and communication studies, digital skills and data management studies, and career orientation; see Cao, 2021).

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Materials and data analysis

The data consist of curricula and course outlines from above mentioned five study programs. The data were analysed using qualitative content analysis with deductive approach (Elo et al., 2014). The deductive content analysis was based on the 14 pedagogical entrepreneurship components identified on our previous study, namely proactivity, strategic vision, flexibility, knowledge for effective pedagogical activity, attracting and using resources, professional reflection, professional determination, creating added value, effective communication, social innovations, risk taking, problem-solving skills, leadership, professional autonomy (Slišāne, 2021; Slišāne & Rubene, 2021; Slišāne et al., 2022). The definitions and criteria of entrepreneurship components are presented in more detailed in the Appendix 2. Data from each study program was first analysed separately and then the findings from each dataset were compared and combined. During the analysis, written description for each pedagogical entrepreneurship how it manifested itself in curriculum and course outlines was made. The first author was responsible for the analysis of Latvian data, while the second author analysed Finnish dataset. The results and interpretations of analysis were jointly discussed and negotiated by the authors until consensus was reached to ensure the reliability of the findings. It should be noted that general learning outcomes were analysed rather than specific courses, so it is possible that a criterion could not be directly identified in the specific course presented in the course outlines.

Results

Overall, the findings reveal substantial differences between the teacher education programs analysed. The main findings of five study programs are visualised in the Table 1 where columns Latvia 1–4 represent results of Latvian teacher training programs and column Finland represents results of Finnish teacher program. For the readability of the results, the green colour of the Table 1 highlights the entrepreneurship components that take place in the specific study programme's curriculum and course outlines, with a yellow that the components occur partially, and with red, if no evidence was found that the component was being implemented.

Analysis revealed that common to all Latvian teacher program curricula was that they emphasized flexibility, knowledge for effective pedagogical activity, professional reflection, and professional autonomy within all the four study programs. In contrast, we found that the Finnish teacher program curriculum and course outlines included all fourteen components of pedagogical entrepreneurship. The four components that were identified in all five study programs are: *flexibility, knowledge for effective pedagogical activity, professional reflection,* and *professional autonomy.*

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Table 1. The occurrence of pedagogical entrepreneurship components in the five study programs curricula

No.	Criteria	Latvia1	Latvia2	Latvia3	Latvia4	Finland
1.	Proactivity					
2.	Strategic vision					
3.	Flexibility					
4.	Knowledge for effective pedagogical activity					
5.	Attracting and using resources					
6.	Professional reflection					
7.	Professional determination					
8.	Adding value					
9.	Effective communication					
10.	Social innovations					
11.	Risk-taking					
12.	Problem solving skills					
13.	Leadership					
14.	Professional autonomy					

Flexibility referred to an ability to plan, implement, evaluate, and develop professional activities independently. It was connected to teacher education students' and pupils' personal growth by taking into account the social importance and function of education as a contributor to lifelong learning. Knowledge for effective pedagogical activity referred to comprehension of the most essential concepts, key theories, research methods, regularities of the field of educational sciences in the contexts of the teacher's professional activity in different levels and types of education. Besides knowledge, also skills to apply that knowledge (based on research) into practice, awareness to promote ongoing issues, for example equality, were also emphasized. Professional reflection was represented as knowledge and skills of the techniques of self-analysis, self-evaluation and self-reflection

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of the pedagogical activity. This component included skills to plan, implement and evaluate student-centred teaching and to identify the factors that promote and impede learning. Professional autonomy was comprehended through ability to be professionally independent, i.e. to plan and carry out educational research, to plan, implement, evaluate, and develop professional activities, and to evaluate student-centred teaching independently, and to identify the factors that promote and impede learning and to be able to take them into account in teaching activities. Although these four components were represented all five study programs' curricula, there was one crucial difference between the Latvian and Finnish programs. The Finnish curricula and course outlines emphasized research as a basis for knowledge and performance. This expanded the mind-set of the components. It was more than the implementation of the curricula and flexibility within the changes but it also included an ability to be proactive and look two steps ahead.

The following components were identified in the Finnish program and some of the Latvian teacher education programs: *Strategic vision, Professional determination, Effective communication, Social innovations, Problem solving skills,* and *Leadership*. There were differences whether these components were fully or partly represented in the Latvian programs. Strategic vision was fully presented in the Finnish curricula and in three out of four Latvian programs. Strategic vision indicated long-term vision. It included an ability to strategically choose the most effective and appropriate pedagogical approach in order to achieve intended learning objectives. In terms of strategic vision, one of the Latvian programs emphasized teachers' roles in development of the educational institution that aims to think outside the classroom.

Professional determination was fully represented in the curricula of two of Latvian and the Finnish teacher education programs, and partly in one of the Latvian programs. Professional determination was about targeted self-directed improvement in the educational field that involved an ability to set appropriate goals and see how to fulfil them.

Social innovation was fully embodied in the Finnish and two Latvian programs' curricula and in one of the Latvian programs is partly. This component referred to an ability to conduct, implement scientific research to make a socially significant impact, and comprehended teacher's role in a wider social context. In of the Latvian programs, it was identified partly due to the fact that description doesn't include the implementation of the scientific research.

Problem-solving skills were fully represented in the Finnish and two Latvian programs. Additionally, in one of the Latvian programs, it was emphasized partly. Problem-solving skills were connected to the teacher's everyday work. The problem-solving was related to challenges of individual pupils, classes, and within the organization and educational system as a whole where problems can be solved either individually or incorporated.

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Leadership was not identified in two of the Latvian programs at all and partly in other two of the programs. These two Latvian programs highlighted leadership as individual self-management. However, in the curriculum and course outlines of the Finnish program, leadership referred not only to individual self-management but also to action of leading a group of people and management of resources.

Effective communication was fully covered in four out of five programs. One Latvian program covered it partly, because their curriculum emphasised cooperation with colleagues. However, they did not signify the importance of cooperation with parents, student, members of scientific community, administration other stakeholders inside and outside the school like the other four programs.

In any of the four Latvian programs, we did not identify following components: *proactivity, adding value, risk taking, attracting* and *using resources*. Although these criteria were acknowledged in Finnish curricula, risk taking was partly recognised due to the fact that an ability to cope with uncertainty was acknowledged. However, an ability to evaluate the consequences were not emphasized. Additionally, to have knowledge of how to assess the probability of risk occurrence and to reduce risk occurrence or related losses were absent.

Proactivity was characterised as the ability to proactively search, notice, explore opportunities related to professional activity and to take advantage of opportunities and challenges in the classroom or educational system, in society as a whole and to understand the meaning of scientific and (teacher) professional activities as part of society and to be able to participate in public debate. Attracting and using resources highlighted an ability to attract and manage the necessary resources (human resources, finances, material resources), to understand the importance of education and curriculum, to be able to examine educational policy from the historical, social, cultural and individual starting points, to be familiar with and able to apply methodological approaches in a wide range, and to be able to collaboration with different stakeholders. Creation of added value was associated with an ability to create added value at the level of the student, class, organization, to understand issues of equality and to promote equality among pupils as well as at the class and organization level, and to have comprehension how to take into account sustainability in teacher profession.

Conclusions

By exploring current curricula and course outlines from five teacher education programs in two different contexts, this study offered insights into pedagogical entrepreneurship. This study has educational significance in identifying differences between the programs how entrepreneurial competencies are emphasised in the curricula and course outlines. The results acknowledge what kind of learning opportunities teacher education students have during their studies. The

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situation differs between and within Finnish and Latvian programs. Differences within Latvian programs can be explained with diversity of the target audience and emphasis of teaching, for example, pre-school teacher education has different task than elementary teacher education. However, on the other hand, pedagogical entrepreneurship as a generic competence is found to be beneficial in all spheres of life (Tuononen et al., 2022), and the components of pedagogical entrepreneurship as proactivity supports teacher professional development within all levels of education (Slišāne, 2021). The differences in pedagogical entrepreneurship between Finnish and Latvian programs were obvious: where the curriculum of Finnish teacher education program intends to develop all components of pedagogical entrepreneurship (cf. Slišāne, 2021; Slišāne & Rubene, 2021; Slišāne et al., 2022), Latvian programs have only four fully covered components. If the components of pedagogical entrepreneurship are not emphasised in the curriculum, there is a risk that these topics become incidental in a random selection of courses. Thus, to ensure the learning of entrepreneurship competencies, it is important that curriculum is carefully and systematically designed to teach these skills (see Tuononen et al. 2022). However, the first step is to raise awareness of what is meant by the concepts of entrepreneurship competencies and pedagogical entrepreneurship among teacher educators and those who are responsible for the developing curricula (cf. Haara et al., 2016).

The major limitation of this study was the small number of the teacher education programs whose curricula and course outlines were analysed. Moreover, the results were based on an analysis of the curricula and course outline documents, and thus we do not know how the teacher educators in these programs are using these documents when they are planning and implementing their teaching activities.

Teacher education has been identified as an important context in which to facilitate the entrepreneurship competencies (Fullan, 2020). However, we know from our prior research that students' readiness to teach entrepreneurial competences to others is limited (Slišāne et al., 2021). Thus, knowledge and comprehension about the components of pedagogical entrepreneurship need be a steppingstone for the improvement of the future teacher training programs in order to support future teachers in their life long professional activity.

Aknowledgment

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Appendix 1

Characteristics of entrepreneurial teacher

No	Category	Characteristics
1	Proactivity	Proactively seeks (Borasi & Finnigan, 2010, Omer Attali&Yemini, 2017), notices, and explores opportunities related to professional activity. Proactivity is demonstrated by seeking and using opportunities, creating innovations, attracting and managing resources, making contacts (Keyhani& Kim, 2020). Take advantage of opportunities (Borasi & Finnigan, 2010, Omer Attali&Yemini, 2017) and challenges in the classroom, educational institution or system (van der Heijden et al., 2015).
2	Strategic vision	Decisions are made strategically, based on how they want to see the future. When making decisions, available data is used to optimize and streamline those decisions (Dennis & Parker, 2010). For example, they get involved in foreign intermediate projects in order not only to provide students with knowledge of the content, but also to develop competencies in the learning process.
3	Flexibility	Able to adapt to changes (Neto et al., 2019; van Dam et al., 2010), but critically evaluates and analyzes reforms, others' opinions and own actions (Keddie, 2017; van der Heijden et al., 2015).
4	Knowledge for effective pedagogical activity	Creates a learning environment that promotes student growth and collects, evaluates, uses various data sources and processing approaches to confirm or deny assumptions and knowledge about students (Dennis & Parker, 2010). Modifies curricula to ensure that they meet the needs of students (Oplatka, 2014). Familiar with classroom management, content and methodology (Dennis & Parker, 2010; Hunzicker, 2017; Martin et al., 2018; Nash, 2014). Have a good knowledge of the content being taught as well as knowledge of the education system, school, students, families and society (Berry, 2013). The acquired teaching experience is used to ensure more effective transfer of learning content and use appropriate teaching methods (Amorim Neto et al., 2017), while existing and current information is used to create unique value (Hunzicker, 2017).
5	Attracting and using resources	Knows how and knows how to attract the necessary resources (human resources, finances, material resources), to do this, uses various methods, for example crowdfunding (Bulger et al., 2016), using his contacts, political and public support (Bills et al., 2015), forming strategic partnerships (Martin et al., 2018). Competently manages various resources – technological (Borasi & Finnigan, 2010), human capital (Nash, 2014), time (Hanson, 2017) and informational data (Amorim Neto et al., 2019).
6	Professional reflection	Relying on their own intuition, derived from experience and knowledge of the educational organization in which they work (Borasi & Finnigan, 2010). On the way to success, one learns and builds on the acquired professional experience (Bulger et al., 2016; Schimmel, 2016), for example, reflects on the mistakes made and optimizes one's activity.

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Appendix 1. Continued

No	Category	Characteristics
7	Professional determination	Demonstrates determination and perseverance (Borasi & Finnigan, 2010; Hanson, 2017) to achieve set goals and realize a vision, for example, seeing opportunities for social innovation, creating added value inside or outside the classroom, gradually and consistently implements goals despite obstacles and limitations (Martin et al., 2018).
8	Creating added value	Creates added value – at the level of the student, class, organization or extra-organization. Creating added value mobilizes and optimizes resources, is based on a specific need and creates a solution whose contribution is greater than the necessary development/production costs. It creates different value at the student and classroom level, taking into account the different needs of students.
9	Effective communication	Collaborates with colleagues, educators, field professionals to share and gain new knowledge (van Dam et al. 2010), jointly evaluate and implement innovations, and create exclusive educational experiences (Oplatka, 2014; Schimmel, 2016). Creating cooperation outside the classroom provides opportunities for students to gain interdisciplinary experience, which promotes the teacher's pedagogical entrepreneurship and students develop entrepreneurship by training communication, cooperation, etc. skills.
10	Social innovations	Introduces innovations. Innovation is the main driver of the entrepreneurial process and it can manifest itself in different aspects (Keyhani& Kim, 2020), for example, in the context of a teacher's work, it can be innovations in the topics taught or new functions that a teacher can take on (mentor, consultant, etc.), new ways of teaching (e.g. practice-based learning), new students to teach (e.g. students with special needs, students from socially disadvantaged backgrounds), new resources to use (e.g. new technology), and new ways of organizing learning, process or any of its elements (for example, new forms of cooperation with other teachers or external institutions). Teachers' social innovations are mainly focused on unique situations they face in their daily and professional activities and new ways of using pedagogical entrepreneurship to create added value for a student, class, organization, society or educational system (Keyhani& Kim, 2020).
11	Risk taking	Takes risks, for example in the classroom, school or education system, implementing innovative ideas and/or experimenting with technologies (Amorim Neto et al., 2019; Berry, 2013), yet carefully evaluates the consequences (van Dam et al., 2010) and makes calculations (Martin et al., 2018; van der Heijden et al., 2015), which involves choosing a strategy using one's knowledge and experience to minimize risk-related losses (Borasi & Finnigan, 2010), such as money, reputation and time (Schimmel, 2016). Developed research supports that teachers take risks when they feel confident enough to handle uncertainty, embarrassment, and emotional stress.

Appendix 1. Continued

No	Category	Characteristics
12	Problem solving skills	Socially motivated problem solving at the student and classroom level (Dennis & Parker, 2010). At the community level, they try to create social change (Berry, 2013). Challenges and problems are seen as an opportunity to create social change (van der Heijden et al., 2015) and through change, innovation is introduced (Keyhani& Kim, 2020) – new teaching methods, such as practice-based learning (Dennis & Parker, 2010).
13	Leadership	Leadership skills and financial literacy strengthened by education and/or work experience in business. Van Dam et al. (2010) believe that knowledge of marketing, understanding of product demand and supply, ability to manage risks are the most essential knowledge required. Research shows that when teachers know what entrepreneurship is and what it consists of, they are more likely to be entrepreneurial (van Dam et al., 2010).
14	Professional autonomy	Possess professional autonomy (Yemini & Bronshtein, 2016) and adaptability skills (Hanson, 2017; Nash, 2014), thus independently make decisions in their activities, evaluating the changing environment and context. Feels responsible for students' needs and wants to provide high-quality educational opportunities both at the classroom and school level (van der Heijden et al., 2015) and uses extracurricular opportunities. Values one's growth (Keyhani & Kim, 2020) and feels the need to strengthen one's inner self.Trying to improve their knowledge and working conditions, looking for opportunities for professional development (Amorim Neto et al., 2019; Bulger et al., 2016; van der Heijden et al., 2015). Striving for personal achievement is the desire for interesting and challenging work (van der Heijden et al., 2015), as well as the satisfaction of adding value as a result of one's work (Martin et al., 2018). Enthusiastically seeks opportunities for professional development (Amorim Neto et al. 2019) and personal achievement by taking on work that is both interesting and challenging (van der Heijden et al., 2015). Motivated by personal benefits such as competitiveness, networking/collaboration, financial rewards, recognition, and peer feedback (Shelton & Archambault, 2018).

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Appendix 2

Criteria for evaluating pedagogical entrepreneurship

No.	Component	Expression of criterion
1.	Proactivity	**Skill:** proactively search, notice, explore opportunities related to professional activity. Take advantage of opportunities and challenges in the classroom or in the education system, in society as a whole. **Knowledge:** where to look for opportunities in professional activities, knowledge necessary for the context to take advantage of opportunities in professional activities. **Attitude:** curiosity, attentiveness, openness to new possibilities.
2.	Strategic vision	**Skill:** make strategically beneficial decisions using the available data. **Knowledge:** how to create a strategy to achieve a vision. **Attitude:** determination, rationality/ strategicity.
3.	Flexibility	**Skill:** adapt to change, critically evaluate, and analyse reforms, opinions of others and their actions. **Knowledge:** about alternatives to implementing the desired result. **Attitude:** openness, flexibility.
4.	Knowledge for effective pedagogical activity	**Skill:** apply and adapt the necessary class management, curriculum, and methodology. Use knowledge to create unique added value – ensure more efficient transfer of learning content and use appropriate teaching methods. **Knowledge:** about content, pedagogy and pupils, communities, and families. **Attitude:** desire to learn, to follow the latest developments in education.
5.	Attracting and using resources	**Skill:** attract the necessary resources (human resources, finance, material resources). Manage various resources – technological, human capital, time, and informative data. **Knowledge:** different methods to attract resources – crowdfunding, contacts (networks), political and public support, strategic partnerships. **Attitude:** openness to corporation and open-minded view.
6.	Professional reflection	**Skill:** to build on and learn from the acquired experience in order to move towards success – reflect on the mistakes made and optimize activity. **Knowledge:** how to reflect and how to optimize activities based on the evaluation carried out (reflection techniques). **Attitude:** responsibility to students' needs, self-analysis, desire to improve their activities and provide high-quality educational opportunities at both class and school level, as well as taking advantage of extracurricular cooperation opportunities.
7.	Professional determination	**Skill:** to set and consistently take the necessary actions to achieve the set goals, overcome difficulties and cope with obstacles (restrictions). **Knowledge:** about the methods of setting goals. **Attitude:** determination and perseverance.

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No.	Component	Expression of criterion
8.	Adding value	**Skill:** to create added value – at pupil, class, organisation, or non-organisation level, taking into account different needs. **Knowledge:** about new product creation strategies. **Attitude:** the desire to innovate, to bring about change.
9.	Effective communication	**Skill:** to communicate and cooperate with students, colleagues, administration, stakeholders outside the school. **Knowledge:** how to create effective communication, business etiquette. **Attitude:** openness to communication with those involved in education (class, school, extracurricular), willingness to cooperate.
10.	Social innovations	**Skills:** innovate in the topics to be taught and/or take on new functions (mentor, consultant, etc.), introduce new forms of learning (e.g. experience-based learning), test different resources (e.g. new technologies) and different ways of organising learning (e.g. new forms of cooperation with other teachers or external organisations). **Knowledge:** about the topics to be taught, methodology, techniques to be applied to create value. **Attitude:** the desire to create, to improve. Openness to new innovations.
11.	Risk-taking	**Skill:** cope, respond adequately and act in case of occurrence of risks. Perform calculations and evaluate the consequences. Choose a strategy that minimises risk-related losses. Ability to cope with uncertainty, embarrassment, and emotional stress. **Knowledge:** how to assess the probability of occurrence of a risk and reduce the occurrence of risk/associated losses. **Attitude:** willingness to take risks, to learn from mistakes.
12.	Problem solving skills	**Skill:** tackling problems at pupil, classroom, and community level to create social change. Challenges and problems are seen as an opportunity and innovate through change. **Knowledge:** knowledge appropriate to the professional context, which helps to solve the problem that arises. **Attitude:** social motivation to solve problems.
13.	Leadership	**Skills:** to work autonomously, to make decisions independently, assessing the changing environment and context, to manage human resources. **Knowledge:** human resources management, including motivation, marketing, product/service demand and supply. **Attitude:** taking responsibility for global processes.
14.	Professional autonomy	**Skill:** to plan the learning process – to work independently and plan the time. Plan the learning process, define individualized goals of the learning process, plan training activities, systematically evaluate the course of the learning process and create learning goals and assessment criteria. Implement the learning process – create a learning environment, promote cooperation, provide feedback and evaluate teaching methods. To improve professional competencies – to reflexively and critically evaluate pedagogical practice, taking into

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Appendix 2. Continued

No.	Component	Expression of criterion
		account the learning results achieved by students, feedback provided by colleagues, the standard of the teaching profession and the latest current events in pedagogy, strategically plan and organize professional development. To develop an educational institution and the field of education – to understand the strategic development vision of the educational institution and to engage in the achievement of the planned goals within the scope of its competence. Delegate tasks. **Knowledge:** about learning process, methodology, management, and time planning. Knowledge of current events, challenges, and organizational/ individual professional development opportunities in the field of education. **Attitude:** the desire to professionally improve and develop the organization in which you work.

Teacher Creator:
Practices of Creating Educational Contexts

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ABSTRACT

By exploring certain perspectives, it is hoped that teachers can be helped to create inclusive educational contexts by transforming the learning environment into a third educator. Based on the Reggio Emilia approach, we hope to reveal the ways and means by which the spaces of the educational institution can be interpreted, prepared and in some cases created, in order to encourage children to explore and express themselves. This study presents the concept of context as a modern educational space and draws attention to several essential aspects for the creation of educational contexts: educational provocations and invitations; the use of materials and tools to create them; the learning documentation and learning visibility; and the nature of the adult-child dialogue. A qualitative research model was applied that produces information in the form of descriptive data records by providing clear and systematic descriptions. The data collection techniques used were literature studies and narrative interviews with pre-school teachers. Twelve pre-school teachers participated in the study and criteria-based selection was applied, with thematic analysis being used to analyze the data (Soderberg, 2006).

The experiences of pre-school teachers in creating contexts are summarized by distinguishing the following aspects of the thematic analysis of contextual development experiences: the change in the role of the teacher, the nature of the child's activities and the process and principles of creating contexts.

The results indicated that the context helps to engage the child and establish an authentic "dialogue" between the child and the materials and tools used, which is then developed with the adult. Educational contexts help develop the creation of an educational environment and allows teachers to create unique learning situations in any scenario.

Keywords: educational context, pre-school teacher, the Reggio Emilia approach, learner-centered teaching, creativity, the environment as the third teacher

Introduction

The strategic educational provision "Lithuania 2030", emphasizes, that in the pursuit of quality education there are two important factors: creativity and openness. Creativity and openness should be taken as essential in directing education, as child-centered education is based on them, by creating a social, cultural and physical environment in which the child actively develops his or her current and future powers (M.E.S.R.L, 2015).

Encouraging child activity and engagement is an educational goal and a rapidly increasing global imperative (Key principles of a Quality Framework, 2014), emphasized in European Commission and other documents. According to the theory of child-centered education, education is organized in such a way as to create conditions for the children themselves to actively participate and explore (Miller, 2019; Sommer et al., 2010). Therefore, learning is considered a rocess that is not a given, but a process in which the child actively discovers (Firlik, 1996). Such an educational process is considered tripartite active: the learner is active because he acts; the teacher is active because he creates an environment favorable to the learner's performance; the environment created between them is active because it promotes action and change; and the teacher's role is to organize and regulate the environment (Vygotskij, 1991). By recognizing the potential and importance of the environment as a third educator, the role of the teacher remains active, but takes on a different characteristic (Miller, 2019). The environment as the third educator is a central concept of the Reggio Emilia approach to education, which states that the physical environment plays a particularly important role in learning. Early childhood education theorists such as Loris Malaguzzi and Maria Montessori emphasize the idea of a prepared, or constructed, learning environment (Brown, 2020). Reggio Emilia practices reveal the ways and means by which educational institution spaces can be interpreted, prepared and, in some cases, created to encourage children to explore and express themselves (Asy'ari & Rachmawati, 2022).

The term "the environment as the third teacher" means that the environment has an important role in building knowledge, where children can explore, experiment, play and learn (Biermeier, 2015). Children adapt easily, like to explore, actively work, and enjoy interacting with friends, parents, teachers and surrounding environments. (Asy'ari & Rachmawati, 2022). Children thrive in environments that are suited to their interests and developmental stages. In the Reggio Emilia approach the environment is viewed as a place that is welcoming, authentic aesthetically pleasing, culturally representative of community, embraces nature and filled with purposeful materials. The layout of the environment promotes relationships, communication, collaboration, and exploration through play. Materials are thoughtfully added to the environment to promote creativity, thinking, problem-solving skills, questions, experimentation

and open-ended play (Blocker, 2020). In order to create such an environment, teachers should look deeper into a child's perspective, not just what they see at eye level. This will develop a better understanding of the basic principles of creating an environment, by considering children's thinking, questions, curiosities and surprises (Biermeier, 2015).

This is especially important in the modern context of education, when we are faced with an abundance of tools for use in educational institutions, and educational spaces are turned into warehouses of rarely used tools that lack educational intention. (Biermeier, 2015). A teacher should be able to reflect on the physical organization of the classroom environment, how it can be manipulated to enhance learning and its impact on students (Brown, 2020). Thus, the problem is defined as a lack of teachers' knowledge and understanding on how to turn the environment into a "third educator" and orient it to active learning activities according to the age of children. Other factors such as limited innovativeness, motivation, lack of creativity of teachers in implementing or organizing the surrounding environment also prevent the utilization of the potential of the given environment (Asy'ari & Rachmawati, 2022).

This article actualizes the role of a preschool teacher who is able to create such an environment, which requires a high level of creativity on the part of the teacher (Biermeier, 2015). Thus, the questions posed in the article are: How can today's teacher use the Reggio Emilia educational contexts strategy of creating an environment and create a space that promotes meaningful learning, individual understanding and develops the values of the child. **Aim of the study** – to open certain perspectives to help teachers create inclusive educational contexts by transforming the learning environment and turning it into a third educator.

Theoretical background

Reggio Emilia approach is influenced by many theories of child development. The study methodology is based on constructivist theories, which look at cognitive processes as a set of certain constantly developing and improving cognitive structures (Bertran, 1995; Giordan, 1995). Didactic attitudes based on the principles of constructivism emphasize learning as individual knowledge created on the basis of personal experience. Primary perception acts as a mediator between the learner's knowledge and thinking structures (Bertran, 1995; Giordan, 1995). The structure of the primary perception is constantly being rearranged so that new knowledge is incorporated into the already existing cognitive structure of the learner. New information is always analyzed according to the model of primary perception, but at the same time it changes this model. It is important to note another important aspect of constructivism which is the use of active learning strategies in child-centered education (Neutzling et al., 2019).

Dewey (1910) concept that all of a child's "thinking is inquisitive" is a fundamental reflection of the Reggio Emilia approach to the child's role in their own learning. From Dewey's point of view, children are natural explorers, capable of making their own decisions, hypothesizing, making predictions, and revisiting what they have learned. John Dewey viewed children's learning as an active process, during which a significant experience for the child is formed, combining three aspects of experience into a unified whole: active action, accompanying emotion and new perception (Dewey, 1959). The research focuses on the experience itself during learning situations and its meaning for the author of the experience and the way of connecting the pedagogical interaction into a coherent sequence, as past experiences are renewed in present experiences and the experiences of others are renewed in personal experiences. This concept is central in the Reggio Emilia framework's image of children and the role that children play in their own learning. Dewey stated that many teachers and educators see children and the curriculum as separate; that you have one or the other.

Vygotskij (1991) emphasized the importance of social interaction and cooperative learning while groups engage with each other, in the building of knowledge. He contended that collective social experiences within various social environments affect the social orientation of individuals and ultimately influences their cognitive functions. It is suggested that new knowledge and skills are created as learners interact with each other and make sense of differences between their current knowledge and new experiences (Brackenbury, 2012).

Based on Vygotskij (1991) the main figure of the teaching process is the child himself, therefore, the learner's experience is considered a key factor in learning. Learning is implemented through the child's personal experience, which is fully dependent on the environment and the teacher's role is the organization and regulation of that environment (Vygotskij, 1991). The teacher, using the great possibilities of the social environment in which the child lives and works, can direct and guide their personal activities in order to achieve development.

Conceptual methodology is also based on the holistic approach to education. Holism emphasizes the interpretation of acquired knowledge, its meaningfulness, knowledge of the essence of man and the world. Holism states that everything exists in the context of interaction, connection and meaning, and that any change or event leads to a reorganization of the whole entity, even a small one. To develop a sense of commonality with the whole world and the joy of self-knowledge, to emphasize the importance of the overall education of the individual and general humanistic educational attitudes. The integrity of cognitive ways and methods is emphasized (Morin, 1992). Such an approach creates prerequisites for the diversity of fields of activity and research methods. Inspired, comprehensive child education includes the child's whole being, his wishes and attitudes (Juodaitytė, 2003). A holistic approach to child education is demonstrated in

Gardner's theory of multiple intelligences. Gardner H. (1983) distinguished and justified a multitude of intelligences, on the basis of which an environmental strategy can be created. It offers an environmental strategy that allows for the individual expression of children's diverse needs by creating an exceptionally resource-rich environment that reflects different types of intelligence. Such an environment would strengthen the development of each intellect and provide conditions for the unfolding and growth of the child's individual potential. These provisions made it possible to highlight the main methodological position: the learning process is possible only in an environment that is meaningful to the child. When education is perceived as a "free" environment for the child's spontaneous expression, which takes place through the natural development of social-cognitive potential, together with the emergence of these processes and the assumptions of the child's creativity in the educational environment that is meaningful to him, in a space that is gradually transformed by children's concepts, actions and deeds. The combination of constructivist, contextualism and holistic approaches is reflected in Loris Malaguzzi's advanced practices of creating educational contexts.

Reggio Emilia environment development strategy: educational context

Reggio Emilia approach reconceptualized space as a primary source of educational provocations and inspirations (Miller, 2019). Malaguzzi's approach to environmental design strategy emphasises that "children discover visual and other expressive languages in tight synergy with verbal, body and logical languages (Manera, 2019). This highlights the importance of visual and physical arrangement in the learning space. When designing the educational environment as a "third educator", it is suggested to take into account the following aspects of the educational space: the harmony between the outside and the inside; intentionality and aesthetics of space organization, degree of availability of resources and tools, nature of activity in the studio.

In this case, the term 'contexts' describe learning situations modeled by the teacher in a certain way, for which a specific short-term educational space is created. The content or idea of the context created by the teacher usually depends on the child's area of interest. In child-centered systems, children's interest is used as the impetus from which learning situations are created. Such environment allows the teacher to respond to the child's interests, liberates and enables the co-construction of knowledge (Curtis & Carter, 2000). This is clearly reflected in the example of the study of the spider, which is presented by Biermeier (2015). The teacher may ignore the children's interest in watching a spider in the playground and limit this activity. However, the teacher can encourage the children

to either draw what they have observed and share it with the group or search the library for a story about the spider or information about these insects, creating a context for studying the spider. The building of knowledge becomes evident when children depict the body and count the legs of a spider in their drawings, comparing the spider with other insects. Deeper understanding and involvement is developed through children's own observation and exploration, answering the children's questions and changing their understanding (Curtis & Carter, 2000).

The Reggio Emilia system (Edwards et al., 2011), which models advanced practices for the development of a child's creativity, draws attention to several essential aspects of educational contexts:
- Learning provocations and invitations.
- Used materials and tools.
- The dialogue between adults and children.
- Learning documentation and learning visibility.

Educational provocations and educational invitations
Reggio-inspired practices help children to build their knowledge of themselves and the world around them through educational provocations, inquiries, and individual learning experiences (Brown, 2020). Learning provocations and learning invitations are methods used to transform the physical environment by presenting unexpected materials and tools, arranging them in a specific order, which invites and encourages the child to approach, explore, ask questions and think reflexively (Brown, 2020). Provocations and invitations to learn are essential elements of any exploratory, game-based learning environment. Children have an innate desire to explore and understand the wonders of the world around them. The presentation of interesting materials in a stimulating environment reinforces this innate desire (Curtis & Carter, 2000). It may seem that nothing new can happen in a well-known space, but from Reggio's point of view, a different look at familiar things creates opportunities to engage the learner and enrich their understanding of themselves and the world around them. We can define the theatrical provocation as a stone lying on the road, over which a person must step. Such definition is suitable for describing educational provocation. After entering an unexpectedly changed environment, the child instinctively stumbles, begins to explore or transform it. In these environments, the child is extremely active, and deeply involved in the experience. Educational provocation is a specifically constructed context, which is made by using various visual means and/or written prompts in order to provoke the child's actions, thoughts and to motivate thinking and exploration (Brown, 2020). Learning provocations are specially designed by the teacher and can be based on the goals of the educational program and the interests of the children. An educational invitation encourages the child to explore, construct and express the already

existing learning experience in an unlimited environment, using various means and methods of expression. Educational invitations are dominated by artistic expression and materials.

Regardless of whether the teacher creates a learning provocation or a learning invitation, the design of their creation is extremely important and can be compared to the pleasure of giving a gift to a dear friend (Curtis & Carter, 2020). Therefore, the space used in both educational invitations and provocations must be attractive to the child. Materials and tools are arranged in a certain order using mirrors and/or the principle of contrast. To create learning provocations and invitations for children teachers use certain strategies such as changing the physical environment, presenting unexpected materials, encouraging joyful and reflexive thinking, asking questions and creating comments (Brown, 2020). Importantly, sensory and artistic provocations help to promote motoric development, social-emotional skills, language development and cognition (Schwartz & Luckenbill, 2012). Aesthetic spaces, consciously designed by the educator reflect the individual values and beliefs of the teacher (Brown, 2020).

Options for learning materials and tools

Materials in the Reggio-inspired group are more ambiguous and surprising (Brown, 2020). In each group you can find paper and drawing tools that are actively used by children. However, in order to develop children's creativity, it is suggested to discover a variety of materials that will help the child get involved and learn. Therefore, there are several types of materials suggested for creating contexts (Brown, 2020):

1) construction materials and secondary raw materials (paper rolls, paper towel rolls, large wooden rings, paint rollers, bottle caps, egg cartons, sticks, boxes, fabric scraps, stickers, etc.,
2) natural materials (tree bark, pinecones, acorns, seeds, natural objects, sand, stones, rocks, wooden parts).
3) natural objects/objects found in the household.
3) mirrors of various shapes and sizes.
4) art tools (all types of tools: chalk, pastels, markers, paints, writing tools, clay).
5) books, large photographs, reproductions.
6) imagination-stimulating toys (animals, dinosaurs, people).
7) blocks.
8) musical instruments (they can also become household items).
9) various light sources. Media that can be used in light ray activities include desk lamps, mirrored tables, used bottles, candles, projectors, white screens, black screens, glasses, magnifying glasses, flashlights, computers, and CDs (Asy'ari & Yeni Rachmawati, 2022).

Figure 1. White paper options

One of the ideas of the Reggio Emilia method is to help children explore, experiment and play using light as a source of learning. Light beam activities can be performed indoors and outdoors (Asy'ari & Rachmawati, 2022). For these activities, indoor spaces are arranged with minimal lighting and dark walls to stimulate children's imaginations using different media. Meanwhile, outdoor activities require bright sunlight so children can use the shadows. Using light and other materials, teachers consciously design engaging learning contexts to create purposeful learning experiences, provoking the child to act and think. Children can also explore materials in new and unusual ways with the help of light. When creating contexts, it is not only suggested to use the most natural materials, objects that children can search for and discover in the environment, but also to create the conditions for the widest possible choice, for example, if the planned activity is to draw on white paper, then children are offered as many options as possible to choose white paper. It can be white paper scraps of different formats, wrapping paper, ribbons, etc. Although a wide variety of means is offered, all objects are arranged in a certain order, sequence, maintaining the structure of an aesthetic composition (Brown, 2020). Children are free to carry materials from one place to another while they are active.

The dialogue between adults and children

In the dynamic process of educational creativity, which is constantly changing, the role of the teacher is changing. From a provider of knowledge to a creator of contexts that provoke discoveries, creating conditions for the child's free, spontaneous creativity. The activity of a teacher as a creator of educational contexts takes on a different character at different stages of the activity process. From the generator of ideas, the designer of an engaging multisensory environment, one moves to the application of reflection, thinking and creativity together with the child. In such a provocative and dialogic context, both the child and the teacher become creators of the process. In an interview with Lella Gandini, Loris

Malaguzzi states that the definition of the teacher's role can never be accepted once and for all, but is constantly revised – as time, circumstances, community, children change, the dynamics of their concern and cooperation change (Edwards et al., 2011).

When creating situations in which the child could act independently and get involved, the teacher withdraws from the leadership process, but moves to the position of an encourager, consultant, observer. The teacher observes and gets involved at the moment when he feels that the child needs help or encouragement and to move the process forward. Encouraging the teacher to get involved in the activity processes together is extremely important for the child, in such a process the child feels supported and develops confidence. The teacher is encouraged to establish a kind of dialogue with the group of children and to join their curiosity (Edwards et al., 2011). According to Loris Malaguzzi (2011), the role of an adult as a teacher complements the role of a child as a learner, so the dialogue between a child and an adult becomes extremely significant. It is a harmony in which the teacher and the child work in the same context. The main action of adults becomes the desire to activate children's creative competences as the basis of all education and the desire to discover appropriate ways to combine their interpretations into a fruitful dialogue with children's thoughts (Edwards et al., 2011).

This dialogue is developed by analyzing processes and asking provocative questions. Correctly used method of questions and moderation of the process unconsciously guides the child towards the desired goal. The metaphor – "catch the ball that the children throw to us and then throw it back to continue the game" speaks of the interaction between the teacher and the child, like a game of badminton. According to Loris Malaguzzi, for the game to continue the skills of the adult and the child need to be properly adjusted so that their growth in learning is meaningful, (Edwards et al., 2012).

The Reggio Emilia approach invites teachers to act playfully, respectfully, leading to an active, provocative educational process. The teacher, as a planner of the educational process, becomes a co-author of knowledge. A creative teacher is perceived as a person who is able to adapt and create methods and activities for specific learning situations, thus being able to create an authentic learning environment.

The role of the pedagogue remains active, while, spontaneous, child-initiated education creates more opportunities than purposefully organized, teacher-led education. Teacher's autonomy and freedom of action and creative thinking should be supported as they are creators and central fugues of knowledge educational and social transformation. The image of the teacher as a creator, fundamentally changes the role of the teacher and becomes a challenge in the educational space.

Learning documentation and learning visibility

Documentation of teaching/learning activities takes place throughout the process. In the Reggio Emilia approach, documentation is used as a tool to allow learners and teachers to identify and reflect on learning (Roque & Tamashiro, 2022). One of the distinctive features of the documentation of the Reggio Emilia system is its visuality. Certain methods based on visuality are used for this purpose: visual trajectories of the child's understanding (recording the child's drawings and/or the child's expressed thoughts), visual participation trajectories, photo collages, hexagons, and other methods. Documentation in the form of notes, photographs, videos, and artifacts aims to "make learning visible" (Krechevsky et al., 2009). Documenting the learning process can reveal a complete and deep picture of a child's learning.

Documents play an important role in recording and identifying individual learning trajectories of children. The recorded changed element in the child's drawing and its verbal naming can reveal a significant experience for the child and show the effectiveness of the pedagogical effect (for example, all the child's drawings and his expressed thoughts related to the study of the spider are consistently recorded). According to Roque and Tamashiro (2022), documentation using images, dialogue, artifacts, and other tools allows educators to capture the individual experience of a child and the value of what and how children learn. On the other hand, such visual documentation is important for the teacher himself. This is an opportunity for teachers to reflect on their practice, the experiences of learners and improve their action plan based on this (Rinaldi, 2004). Teachers can use these types of documents to collaborate with the child in reflecting on their teaching and to assess the collaborative inquiry process. (Roque & Tamashiro, 2022). Furthermore, when teachers document children's learning and make it visible to their families and community, it provides concrete evidence that children are learning through hands-on experience (Kaufman, 2014).

From the point of view of educators in Reggio Emilia schools, documentation is open-ended and changing, following the idea that learning goals and processes emerge in the course of child-centered activities, more often they emerge rather than being predetermined" (Krechevsky et. al., 2009).

Through the visuality of documentation, teaching and learning become "embodied" and reveal the links between teaching and learning. In a recent study by (Vossoughi et al., 2020) work emphasizes that the visual "embodiment" of documentation can have ethical and political implications for those involved, as it reveals how they participate and what their future teaching and learning experiences might look like. Therefore, the aim is to develop educators' understanding of these actions and consequences. Thus, images and visual information are used in several ways: as a means for educators to reflect on their teaching actions, for students to reflect on their experiences. Teachers also document children's learning to make it visible to their families and community.

Methodology

This study employed a qualitative research model that produces information in the form of descriptive data records by providing clear and systematic descriptions. The data collection techniques used were literature studies and narrative interviews with pre-school teachers. Thematic analysis was used to analyze the data (Soderberg, 2006).

In 2022 February – March, 2 months long action research was organized in the pre-school educational institution, during which, scientists collaborated with practitioners, with the aim to initiate innovative practices during creation of educational contexts and to record the experiences of teachers. The purpose of the action research is to test a theoretical solution in practice. In education, the validity of creating theoretical solutions depends not so much on "scientific" truths, but on their usefulness for a specific practical situation. Therefore, with this type of research, the correctness of theoretical solutions is confirmed through practice (McGlinn Manfra, 2019). Twelve pre-school teachers participated in the study and criteria-based selection was applied. Research participants were selected based on the following criteria:

- Preschool teachers, younger than 35 years old.
- Having at least 2 years of educational experience.
- Having participated in specific training related to the creation of educational contexts.

All research participants had higher university education, at least bachelor's degree.

Table 1. Characteristics of research participants

Code	Research participant	Age	Work experience
T1.	Lilija	28	6 yrs.
T2.	Simona	27	3 yrs.
T3.	Ieva	30	6 yrs.
T4.	Julija	30	4 yrs.
T5.	Gintarė	30	6 yrs.
T6.	Justė	32	13 yrs.
T7.	Ilona	33	7 yrs.
T8.	Ineta	25	2 yrs.
T9.	Darius	26	6 yrs.
T10.	Neringa	32	3 yrs.
T11.	Rita	38	15 yrs.
T12.	Dovilė	40	7 yrs.

During the interview, the teachers were asked to describe what specific contexts they have created during this period and to present the process of creating at least one of the contexts in detail, keeping the sequence of events as consistent as possible: the birth of the idea of a context → context creation → development of context together with children → context transformations → self-evaluation of activities. During the interview, the research participants were also encouraged to express the experiences and feelings they went through during the process.

After examining the collected material, the main themes were formulated using the inductive method, which are closely related to the available data and are not "tied" to theoretical basis (Braun et al., 2014; Soderberg, 2006).

Ethical principles were followed in order to ensure the well-being, safety and confidentiality of research participants. In order to ensure the confidentiality of the research participants, they have been given fictitious names, and the data were used for academic purposes only. The interviews were conducted at a time convenient for the research participants in a convenient place, thus ensuring the principle of benevolence (Žydžiūnaitė, 2012). During the research process, the principle of human dignity is maintained, the participants are introduced to the means of ensuring confidentiality, the purpose of the research and the application of the results.

Results. Experiences of preschool teachers in creating contexts

During the research, three main topics emerged, which are relevant when analyzing the experience of creating contexts, these are: the competences and role of the teacher as a creator of contexts; the activity and involvement of the creating child; and the process of creating a context as an educational environment.
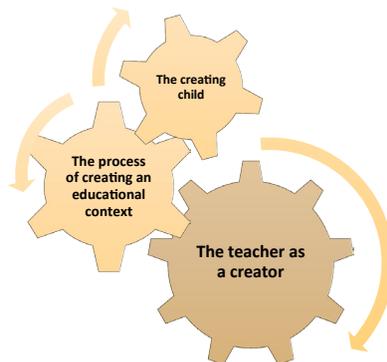
Figure 2. Thematic map of pre-school teachers' narrative interviews

Analyzing the first topic of the **"Teacher Creator"**, the teacher's creativity competence is emphasized as one of the most important prerequisites for professional activity in creating educational contexts. The research participants associate the competence of creativity with the relevant attitude and abilities. The teacher's new approach to the objects in the environment and their use is important here.

> *Everywhere and always you can discover something new, untried and unknown. All these things must be looked at through the eyes of the developer. A small detail is enough, which can be born into wonderful things – creative projects when working with children.* (T1)

Another important manifestation of a creative approach, which is emphasized by many research participants, is the courage to improvise, present your own ideas, have a flexible approach to the educational process, and avoid templates.

> *A creative teacher takes a broad view of the world, is interested in innovation, looks for new ways to organize activities involving and interest children, uses many non-standard, self-created tools in his work.* (T3)

Such a teacher is not afraid to take risks, not afraid of changing circumstances, acts boldly and creatively.

It is important to note that creating contexts provides an opportunity to develop creativity competence, as it recognizes that there is no one right answer, but rather a lot of discovery and exploration.

> *Every idea born from inquiry is correct because the teacher acts in response to the needs of the students.* (T5)

A teacher with such an attitude is able to educate a child by creating an environment, means and opportunities for him.

When describing the experiences of creating educational contexts, the research participants note the changing and dynamic role of the teacher. When children get involved in activities, the teacher becomes an observer, and the children become creators, discoverers, active participants in the process. Therefore, the teacher can be a little more distant, watching the children in the process.

> *Only at the children's request, the teacher-creator enters the process, helps the children solve the problem or answer the question that arose in the process.* (T6)

By observing children acting freely and without restrictions, the teacher can understand how children learn at their own pace. Since children are interested in different things, the more diverse the context, the more interesting it is to observe them.

> *The creator teacher has a rather difficult task to prepare a quality environment for engagement, but it is a great pleasure to observe the process.* (T5)

Describing the teacher as a creator of contexts, the research participants also characterize him as constantly learning from his experiences, experiencing joy and doubting.

> *Negative feelings can set in when things don't go according to plan. Then I catch myself thinking, "it wasn't meant to be, I didn't think of it that way." Because when children are allowed to act freely, no one can be sure that they will go where they are invited. Sometimes it is not possible to prepare the environment in such a way that it interests children to develop the context more deeply.* (T8)

Such a teacher creates conditions that aim for the child to learn, create and act freely.

The second topic "**Creating child**" highlights the children's activity and involvement in activities. It focuses on better listening to children, motivation to act, learn and get to know each other. A well-designed context encourages the child to act and test himself in different activities.

Teachers also notice that children's involvement does not last long, sometimes they lose motivation to act, and they have to be re-engaged.

> *Not all children concentrate their attention for a long time, often they want to do activities hurriedly, dismissively, but the initiative of other children who are still active brings them back to the activity.* (T10)

By acting and creating, children integrally develop a very wide range of abilities. Teachers note that in addition to counting, measuring or writing, children learn to discuss, find answers, express themselves, recognize different materials, and react to the situation appropriately. As a result, self-reliance, greater self-confidence, community spirit and teamwork are developed. Contextual learning provokes children to act independently and creatively, which is the main goal of educational process.

The third topic "**The process of creating contexts**", distinguishes the three sub-topics related to different aspects of contexts' creation:
- Search for ideas and sources of inspiration.
- Context variability, development, unpredictability.
- Context integrity and aesthetic thread.

During the study, teachers proposed and created contexts of different nature e.g.: an egg was left on the windowsill, which caused a great stir. This led to the creation and development of contexts of the active windowsill throughout the entire kindergarten. The following themes were developed: "Bench", "Mirror",

"Octopus", "Suitcase", "Kitchen Art", "Patterns", "Honeycomb", "Chair", "Tile", "Magnifying glass" and "The Shadow".

Research participants note that the simplest things that children pay attention to have become sources of inspiration when creating inclusive educational contexts. Teachers are suggested to look for new and interesting topics in the immediate environment. The objects and their details have become attributes of observation, exploration and creative expression of the child.

> *Here, for example, the "octopus" noticed by the child on the part of the pavement that we see every day – the rain drain well – can become ornaments in a rich graphic drawing of the child, reflecting his active and sensitive relationship with the environment and a starting point for interest and searching for answers on this topic. It is important to be interested, to see and, if chosen correctly, to be able to apply it.* (T2)

When creating a context, often children provide ideas by themselves or through their expressed thoughts. Whilst teachers create contexts through their various trainings, group decisions and the actualization of these decisions.

However, it is emphasized that one common feature, an idea, must prevail in each context. It is important to preserve the integrity of that idea in the creation of a context. The teachers also noted that the synthesis of different spheres allowed the creation of more interesting contexts than those dominated by only one sphere.

Teachers noted the aspect of context variability and unpredictability.

> *All contexts, no matter which teacher creates them, change their shape rapidly when the children get involved, and are filled with other objects or additional tools.* (T6)

Therefore, it is very difficult to define the lifetime of a context. As long as there is action in that environment, as long as it raises questions, then this context can live: from a couple of weeks to months, depending on its relevance.

Also, teachers note that the same context can be used in various ways and adapted to the topic under discussion by remaking, adding or removing details, replacing them with others.

> *Therefore, you can always look at it from a different angle and not rush to "destroy". The most important thing is for the child to be interested in the environment, to see the changes taking place in it and to want to act in it himself. An interesting, attractive environment always arouses curiosity.* (T8)

When the context is put into the "hands of the children", it can take a completely different form than the original idea. The original idea in the creative process can

change as new ideas are born. Through the creation of a context, attention is focused on the meanings created by the child, which are formed while creating non-traditional environments. The child's perception is formed unconsciously, seeing variability and harmony between the exterior and the interior, when unusual or forgotten spaces of the educational institution are used.

Discussion

It is clear that recognizing the importance of the environment as a "third educator" changes the role of the teacher in the educational process. The new approach talks about the proactive and dialogic role of the teacher. The teacher has more than one task: not only identifying and actualizing the child's area of interest, but acting creatively in creating inclusive educational contexts, what's more, the teaching process itself becomes open and dialogic. In such a provocative and dialogic context, both the child and the teacher become creators of the process. For this reason, special importance should be given to the development of the teacher as a creator. Creativity and imagination skills are salient in all areas involving professional perspective. The question arises, how should a teacher capable of transforming the environment and turning it into a third educator, be trained? What are the necessary competencies for a teacher?

It is important to note that during the action research and discussions with teachers, great attention was paid to the elements of environmental composition, aesthetics, and intentionality, which some teachers had not encountered. For a teacher who transforms the environment, aesthetic perception and feeling are important. The thread of aesthetics should accompany every activity and emerge in various educational situations e.g., creating material provocations, serving the table, adult-child communication, exhibiting works, etc., through a sense of harmony, wholeness and continuity.

The experiences of creating contexts recorded by teachers, revealed the lack of process documentation as one of the weakest links in creating an educational context. Created contexts can change and take a completely different direction, so change, analysis and reflection are a necessary part of the process. Not all the contexts created during the action research could involve children and the best, most inclusive solutions can be discovered by consistently monitoring the educational process. Therefore, a detailed analysis and evaluation of the content and the entire process; documentation of children's activities such as by photographing the activities step by step, writing down the child's comments, stories, etc.; and recording individual trajectories of the child's perception; should be one of the most important parts of the process. However, problematic questions arise in this topic: How to actualize and encourage the visual documentation of the process? How can modern technologies help teachers to record individual trajectories of

a child's perception and expression, as well as teachers' own teaching and learning experiences? What modern tools can be used to document the educational process, so that teachers learn through experience? The analysis of acquired experience gained by teachers would provide direction for the improvement of teacher qualifications and competencies. In this study, important attention is paid to the teacher, trying to answer how teachers develop their personal and professional identity, which is determined by their qualifications, experience, professional learning, the context of the educational institution and personal, professional goals.

Conclusion

A context is a set of provocative environments created by a teacher for a specific activity, with a specific theme and educational purpose. Creating contexts is a process of well-thought-out situations that involve children in activities that awaken their research and creative pursuits. Location, objects and tools become the primary resource for creating an educational environment. Most importantly, is the child's active involvement through the activation of the senses as they are encouraged to experience, discover, explore, learn and create for themselves.

The study highlighted the following characteristics of creating inclusive contexts:

- Creating choices: Giving the child the choice of materials, tools, formats, mode of action, etc.
- Integrity: The synthesis of different spheres allows for more interesting contexts than those dominated by only one domain.
- Change and dynamism: When given into the hands of children, contexts can take a completely different form than the original idea. The original idea in the creative process can change with the birth of new ideas.
- Searching for harmony between the exterior and the interior: When the object is viewed from different perspectives, new uses of the object are discovered in different spaces. Teachers and children are starting to notice more about what is going on in the environment, thinking about how it can be incorporated into education.

Based on the results of the research it can be stated that the teacher, as a creator of contexts, moves:

- From direct management of children's activities to the creation of situations that promote active, spontaneous, creative and research-based education.
- From direct instructions to context, provocation, challenge, dialogue, thinking and creating together, whilst reflecting on the process.
- From fragmented to holistic, multisensory and experiential learning.

Creating contexts is a very creative, engaging process that brings joy to the teacher and children and provides new, interesting and fun learning experiences for children.

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Measuring Student Teachers Level of Situation-Specific Skills for Need-Supportive Teaching

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ABSTRACT

In the contextual model of teacher competence by Blömeke et al. (2015), teachers' situation-specific skills, like perception, interpretation, and decision-making (PID-skills) are regarded as central aspects that determine the performance of teachers in a classroom and are deemed as processes that revolve around student thinking and learning (Santagata & Yeh, 2016). Teachers' ability to notice and meet students' needs, in turn, influences their motivation and engagement in learning. In need-supportive teaching, teachers use instructional behaviors that support students' basic psychological needs for competence, autonomy, and relatedness. The aim of the current qualitative study was to assess student teachers' level of PID-skills for needs supportive teaching. Due to the situative characteristics of PID-skills, authentic classroom videos were selected to assess student teachers' noticing, analyzing and decision-making skills. After watching video clips, semi-structured interviews were carried out. Content analysis was used to discover what aspects student teachers notice; what is the level of their interpretation and decision-making. The study was conducted with 10 first-year MA-level students of several subjects teachers´ programme. The results of the study reveal that although noticing skills are of a good level, interpretation and decision-making skills can be described through lower levels, which indicate the need to pay more attention on the targeted development of student teachers PID-skills in teacher education.

Keywords: self-determination theory, basic psychological needs, teacher situation-specific cognitive processing skills, video based measurement

Introduction

The theoretical framework for this study is based on the contextual model of teacher competence (Blömeke et al., 2015), which establishes that teachers competence consists of their dispositional aspects, situation-specific skills (PID-skills) and performance (Figure 1).

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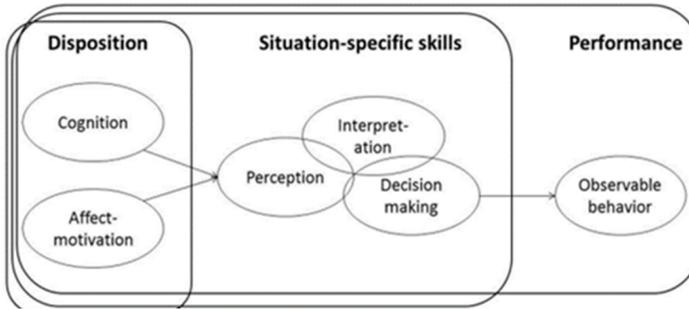
Figure 1. Contextual model of teacher competence (Blömeke et al., 2015)

According to the model, PID-skills function as a bridge between knowledge and classroom actions, where theoretical knowledge is translated into visible teacher behaviour.

Teacher PID-skills are employed in solving complex classroom situations and supporting student learning. Dealing with the complexity of the classroom requires, on the one hand the ability to choose where to target one's attention (Kaiser et al., 2017) and on the other hand, the ability to interpret the situations with theoretical reasoning in mind and make decisions that would support student learning processes. For high quality teaching, knowledge is not sufficient, but situation-specific skills are extremely important (Stahnke & Blömeke, 2021).

Perception has been described as noticing important or noteworthy aspects that influence student learning in a positive or negative way (e.g. Van Es & Sherin, 2002; Seidel & Stürmer, 2014; Alwast & Vorhölter, 2022). In this study, teacher noticing is conceptualized through paying attention to aspects, which are important from the perspective of need supportive teaching. Interpretation refers to the ability to use what one knows to reason about a situation. This means linking classroom events to professional knowledge and clarifying situations according to the components of teaching involved (Seidel & Stürmer, 2014).

Decision-making is characterized as making pedagogical decisions based on the interpretation (Alwast & Vorhölter, 2022). More precisely, decision-making has been characterized through predicting consequences or anticipating responses to student learning and behavior based on the viewed classroom events (Blömeke et al., 2015; Seidel &Stürmer, 2014) or offering alternative solutions and courses of action or more effective teaching strategies (Blömeke et al., 2015, Santagata & Yeh, 2016; van Es & Sherin, 2002).

As self-determination theory (SDT) (Jang, Reeve & Deci, 2010) is the central theory in our teacher education, we were interested in finding out to what extent our student teachers are able to notice need-supportive teaching and supporting

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or thwarting student basic psychological needs in the classroom, as well as exploring the level of their interpretation and decision-making skills. The theory practice gap has been well documented in teacher education research and since situation-specific skills function as the bridge between theory and practice, it is important to analyze the level of student teachers PID-skills, in order to support the development thereof during teacher education.

The aim of this study was to pilot instruments for assessing PID-skills created based on previous research (Chan & Yau, 2021; Kersting, 2008; Van Es, 2011; Alwast & Vorhölter, 2022) and analyze the nature of our student teachers PID-skills, in order to determine best possible solutions for supporting the development of these skills during teacher education studies.

The following research questions were formulated:

1. What is the level of student teacher perception regarding need-supportive teaching and what kind of aspects do student teachers notice in the classroom episodes regarding basic psychological needs (i.e. autonomy, competence, relatedness) satisfaction?
2. What is the level of teacher interpretation skills, i.e. to what extent is interpretation evident through evidence-based reasoning and how much is based on personal experience or without sound reasoning?
3. What is the level of teacher decision-making skills, i.e to what extent are the proposed alternative solutions supported by theoretical reasoning of SDT?

Methodology

Participants

The participants of the study comprised 1st year students of several subjects teachers' MA teacher education programme ($n = 10$). 9 of the participants were female and 1 was male, the average age of the participants was 36.6 (min = 23, max = 52). Half of the participants in the study had already undergone a theoretical course about SDT and need-supportive teaching and half had not. Convenience sampling (Merriam & Tisdell, 2015) was used. Participation in the study was voluntary and informed consent was obtained. Interview transcripts were saved with a pseudonym to preserve the anonymity of the participant and ensure the reliability of data analysis. All of the participants were given the opportunity to review the transcript prior to data analysis.

Data collection

5-minute video clips of authentic classroom situations formed the basis for this study. First, video selection process, which comprised several stages was carried out. Altogether 15 45-minute classroom videos were rated using

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the autonomy support rating sheet (Jang, Reeve & Deci, 2010) and the list of observed need-supportive teaching behaviour (Van den Berghe et al., 2013). Using the coding schemes, three 5-minute video clips that featured most aspects of need- supportive or thwarting strategies were selected.

As the next step one-on-one interviews using video stimulated recall protocol were carried out with the participants. In course of the semi-structured interviews, participants watched the 3 clips from basic school lessons and after each clip, were asked prompts based on Chan & Yau (2021). Questions that the participants had to answer were:

1) What did you notice? The question was repeated until the participant had nothing else left to add.
2) How would you explain the teacher's actions? Why do you think the teacher chose to act in the way she did?
3) If you had been the teacher in that classroom, what would you have done differently in order to support student motivation?
4) Why do you think that your proposed alternative solution would support student motivation better?

Data analysis

A multi-category coding scheme was developed for content analysis. As the first coding process, reducing procedures and structural procedures (Mayring, 2014) were applied, in order to reduce the amount of material so that only essential content remains and it is structured in a clearer way to facilitate further analysis. Data units were selected from the interview transcripts and coded deductively following the three phases of the PID-model (perception, interpretation, decision-making). In total, 549 data items were determined: perception (252), interpretation (204) and decision-making (93).

In the next phase, each category of PID-skills were coded separately following coding protocols formulated based on previous research (e.g. Kersting, 2008; Van Es, 2011; Alwast & Vorhölter, 2022). For the purpose of analyzing perception, two main categories were developed based on SDT (Jang, Reeve & Deci, 2010): relevance to autonomy supportive teaching and not relevant to autonomy supportive teaching. Further subcategories for those items classified as relevant to autonomy supportive teaching were: need for autonomy, need for relatedness and need for competence. Entries categorized as not relevant to autonomy supportive teaching were further categorized inductively. The aim in analyzing interpreting and decision-making was to clarify what kind of knowledge the participants use in their reasoning and how much of it was evidence based. Categories based on previous research (e.g. Kersting, 2008; Van Es, 2011; Alwast & Vorhölter, 2022) were used to analyze student teachers' interpretation and decision-making skills in classroom situations. Descriptions of the levels underlying the analysis are given in Table 1.

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Table 1. Interpretation and decision-making evaluation model

Level	Definition	Example
Interpretation		
Level 1	General comments and pure descriptions about the episode they observed, "often oversimplifying the complexity of the classroom episode they observed" (Van Es, 2011). Comments evaluative without offering actual evidence to their claims, mainly rephrasing what they noticed. Comments are highly judgmental and evaluative in nature (Van Es, 2011). No support from the observed video clips offered to support their claims.	The students' motivation in this lesson was not supported at all. Student motivation was really well supported in this lesson, the teacher gave choices.
Level 2	Tries to reason and make sense about the noticed situation. Interpretation is based on own experience or without bringing out clear links to theory. "Some analytic inference occurs" (Kersting, 2008), teachers state the indicators for selecting a specific aspect (Alwast & Vorhölter, 2022)	I suppose the teacher gave the students a choice, because in my experience it has also been an effective way of making them more motivated.
Level 3	Interprets the noticed aspect clearly through theoretical reasoning. Teacher "makes connections between events and principles of teaching and learning" (Van Es, 2011)	The teacher in the lesson clearly stated the importance of that specific topic, since identifying value and importance nurtures inner motivational resources.
Decision-making		
Level 1	No alternative solutions are offered OR Alternative solutions are offered, but they are irrelevant in terms of autonomy-supportive teaching. (not connected to motivation)	I don't know what the teacher could do differently. The teacher could stop asking the students to stand up at the beginning of the lesson.
Level 2	Predictions or alternative solutions are vague and generic or connected to personal experience and without sound evidence. (connected to motivation)	What I have done, when I see that students are really not into the task I gave them, is try to come up with some aspects of the task, where they can decide themselves how to do it. I don't know why, but it seems to work.
Level 3	Alternative solutions or predictions, which are offered are clearly evidence-based and related to the topic of observation (connected to motivation)	As we have learned, giving constructive feedback to students on how they are doing, supports their need for competence.

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Results

Level of student teachers' perception regarding need-supportive teaching

Perception items were categorized deductively according to SDT and the items, which could not be categorized as autonomy, competence or relatedness supportive, where categorized "not relevant to need-supportive teaching" and further coded inductively, in order to discover what the main topics are that teachers notice in classroom practices. Table 2 gives an overview of the division of idea units (sentences or phrases representing a distinct topic) representing perception.

We assumed that the group who had undergone the theoretical course could be able to notice more relevant events in the classroom and our findings also supported this assumption.

Table 2. Overview of the division of perception data units according to SDT

	Total	Not relevant	Autonomy	Competence	Relatedness
Perception	252	49	124	64	15
SDT course completed	152	21	83	36	12
SDT course not completed	100	28	41	28	3

When looking at the category "Relevant to autonomy supportive teaching" and more precisely the subcategories of need for autonomy, competence and relatedness, we can see that autonomy is the prevailing category. Regarding autonomy, the noticed aspects were most often connected to the pace of the lesson (e.g. "It was a bit disturbing that she was hurrying them up all the time;" "It was very intense, the teacher was hurrying up a lot"), teacher language use (e.g. "There was quite a lot of imperative mood used;" "Teacher uses complicated words"); ways of questioning (e.g. "She only said a few times who has to answer, it was mostly voluntary;" "Asking why and how you are thinking – she was guiding with her questions"), active engagement of students to testing and experimenting (e.g. "She did not say, give the students a moment, where they could think about, why that knowledge was actually important;" "It was positive that the teacher did a practical task, they took the concept "turns" and did a practical task at once"), offering choice (e.g. "She actually gave a choice, whether to do together or try alone at first;" "The students in that clip really did not have much choice;"), connecting to prior knowledge (e.g. "It was very interesting that she did not let the students remember themselves, but constantly said "You remember, right" and "We talked about this and this and the rule is this and this;" "Referencing to what was done before activates prior knowledge") and offering encouragement and clues (e.g. "She gave hints, directed

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the students to understand it more by themselves;" "She actually constantly helped them to remember"). What stood out from the results was that the prevailing categories were noticed by both groups and the qualitative difference in noticing did not manifest in the difference in noticing need-supportive strategies, but mainly in the sheer volume of noticing aspects and somewhat in the detail-richness of the made comments. The same pattern was observed also in the case of competence.

The main topics that were noticed regarding competence were connected to feedback (e.g. "The teacher gave no feedback;" "She gave praise, but it was just "Well done" and did not specify what was well or had been done well;"), instructions (e.g. "Working memory is supported here. The teacher writes on the blackboard, which task they are doing at the moment;" "She told to open the textbook or workbook and wrote the page number on the blackboard at once"), and lesson objectives (e.g. "I liked that the teacher explained the content of the lesson at the beginning;" "At the beginning, lesson goals were brought out, but at the same time, she did not ask them from the students, but just said that these are the questions we are going to answer during the lesson").

The need for relatedness was the least represented category, where the perceived aspects fell under the topics pair- and groupwork (e.g. "They did pairwork;" "It was nice that they could work in pairs"), cooperative learning (e.g. "There were no possibilities for cooperative learning;" "The students could not really offer help to each other;" "They practiced together") and lack of relatedness support (e.g. "I didn't notice anything connected to relatedness that could have supported it;" "There wasn't much relatedness"). Here, quantitative and qualitative differences were noted, as only 3 out of 15 occurrences of noticings connected to relatedness were made by the group who had not completed the theoretical course and all three instances reported on the students practicing together with the teacher.

As seen from Table 2, the majority of data items under perception did fall under categories deduced from SDT with only 49 data items out of 252 classified as not relevant to need- supportive teaching. The main topics, which were coded as not relevant were mainly connected to teacher and students behavioural aspects (e.g. "Someone yawned;" "They stood up at the beginning of the lesson;" "The teacher had a loud voice") lesson materialistic content related (e.g. "They had a worksheet;" "They used a globe") and task description (e.g. "They read a poem;" "They read the text out loud"), where teachers simply offered descriptions of the noticed activity or the environment.

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Level of student teachers' interpretation and decision-making regarding need-supportive teaching

Idea units categorized as interpretation and decision-making were both further categorized into 3 levels based on the quality of the utterances. Table 3 gives an overview of the division of interpretation levels.

Table 3. Overview of the division of interpretation levels

		Level 1	Level 2	Level 3
Total	204	90	82	30
SDT course completed	115	51	37	26
SDT course not completed	88	39	45	4

Regarding interpretation, Level 1 items were characterized as being general comments about the observed aspects, which either oversimplified the classroom event, mainly rephrased what was noticed or were evaluative without offering any evidence to the claim (e.g. "It was a very strict classroom;" "They cannot feel bored, because they are active;" "It was kind of dull rule learning"). Level 2 items were characterized by being based on one's own experience, without bringing clear links to theory, however, some analytical inference occurs (Kersting, 2008). Some of the typical examples in Level 2 included: "I personally don't think that this is important, it somehow implies that orders are given and if you don't comply then I think that this is demotivational" and "Practical tasks, especially for younger classes, are really beneficial, but they also work well for older classes, because students always like to make posters, discuss with each other, draw, make some kind of summaries, so as one part of a lesson, it is definitely very motivating." Level 3 characterizes items, where clear theoretical reasoning of the noticed aspect is offered and clear connections made between the observed events and principles of teaching and learning (Van Es, 2011). Level 3 typical responses include, for example: "Perhaps autonomy isn't supported very much, but it does help a bit that they got to set the goal together, indirectly together, because it was already set, but they got to ask questions themselves." and "It is connected to competence, where they feel that it is not something completely new for them, but that specific task is connected to previous things."

For the purpose of this study, decision-making was contextualized through being able to offer alternative and more effective solutions and the goal was to find out to what extent the offered solutions were evidence-based and related to the specific topic of observation. Table 4 illustrates the division of decision-making levels.

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Table 4. Overview of the division of decision-making levels

		Level 1	Level 2	Level 3
Total	93	20	73	0
SDT course completed	62	13	48	0
SDT course not completed	32	7	25	0

Level 1 was illustrated by lack of alternative solutions or offered solutions, which were irrelevant to the focal topic. The majority of the decisions in Level 1 were connected to organizing tasks ("I would read from the textbook first;" "I would have them turn around the right shoulder, not the left one"), rearranging seating ("I would rearrange seating") or standing up for greeting ("I would not have them stand up at the beginning of the lesson"). These categories and examples illustrated the responses of both groups of student teachers with the only difference being that rearranging seating was brought out only by the group that had not completed the SDT course. Level 2 responses, which formed an overwhelming majority of the responses in this category, indicate the type of answer, where the offered alternative solution is either generic or vague or connected to personal experience. In all cases they are connected to need-supportive teaching, in order to be classified as Level 2. Here, the alternatives were mostly connected to lesson structure and task content ("There should be more possibilities for the students to do different tasks;" "Maybe it is possible to make some kind of flashcards or a task on an interactive board. Maybe this would create a bit more of this good excitement"), checking student understanding and giving feedback ("They could have had the chance to check themselves, give some kind of feedback;" "I would ask guiding questions"), teacher visible behaviour and pace of the lesson ("I would give them more time to think;" "I might have written the topics on the blackboard, so they would have been in front of the eyes;" "I would explain the task more slowly"); connecting to previous knowledge and supporting self-direction ("I would let the student try to remember the previous lesson more actively;" "I would let them try on their own for a while"). No instances out of the 93 data items categorized as decision-making were classified as Level 3, which described the instance of offered alternative solution being clearly evidence-based.

Discussion

The aim of the current study was to explore the level of student teachers' situation-specific skills for need-supportive teaching using video stimulated recall method that has been proven to be a valid instrument for assessing PID-skills by numerous studies (e.g. Kersting, 2008; Seidel & Stürmer, 2014). As situation-specific skills are described as processes through which knowledge and

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beliefs become relevant in practice (Santagata & Yeh, 2016), it is important to know the quality of student teachers PID-skills for need-supportive teaching, to better understand what they notice and to what extent they are able to transfer theoretical knowledge to classroom practice, in order to support the further development of these skills.

The results of this study revealed that regarding need-supportive teaching, noticing abilities of our teacher students in both groups are of a good level, proven by the fact that the vast majority of noticed aspects were connected to basic psychological needs support or lack thereof. Research into perception has stated that the ability to notice is a skill that develops over time (e,g. Van Es & Sherin, 2002; Keppens et al., 2019) and the competence continuum model shows that PID-skills are influenced by teacher knowledge (Blömeke et al., 2015), i.e. we tend to notice what we know. This explains why student teachers who had previously learnt about SDT noticed more aspects in the classroom videos than the group who had not. However, the study also offered an interesting finding regarding relatedness, which was the least noticed category in perception. Teachers were clearly less capable of noticing aspects that support the creation of a warm and safe classroom environment and paying attention to aspects such as tone of voice, body language, eye-contact, physical proximity to the students. Forming supportive and warm relationships is highly important and has positive effects on student achievement and engagement among other factors (Kincade et al., 2020) and it has been documented by a number of studies that students who believe that their teachers are caring and supportive pay more attention in the lessons (Wentzel, 1997) and are more motivated (Murdock & Miller, 2003). Keeping this knowledge in mind and at the same time seeing that teachers notice aspects related to the formation of warm and caring classroom relationships the least in their observations, gives us a clear indication that more attention needs to be paid on noticing and acknowledging these aspects in teaching.

Regarding interpretation and decision-making skills, the study also revealed several interesting aspects. Santagata & Yeh (2016) argue that PID-skills improve in sophistication over time and this sophistication is revealed through more detailed and coherent interpretations. Based on this, we could hypothesize that the group who had completed the theoretical course would offer interpretations that would fall into the categories of Level 2 and 3. Even though, we see that the group who had completed the SDT course offered more interpretations in Level 3 than the group who had not completed the course, but, in terms of Level 2, an opposite pattern emerged. Moreover, when looking at the whole-some picture of the data, it is revealed that for both groups, Level 1 answers, which indicate descriptive, judgemental and theoretically unproven interpreta-tions form the largest group of responses. One the one hand, this result could be explained by the fact that the participants were at the very beginning of

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their teacher education studies, which falls in line with the results of Alwast & Vorhölter (2022). On the other hand, the lower level results revealed in our study indicate that sufficient attention has not been paid on deliberate practicing of PID-skills during the theoretical course to have an impact on the PID- skills of the teachers. This falls in line with previous findings that stress the importance of deliberate practice opportunities for the development of situation-specific skills (Santagata & Yeh, 2016) and that it is not enough for the development of PID-skills to just reflect on classroom events or learning situations, but targeted attention needs to be paid to the interpreting those events and justifying the made decisions (Lin et al., 2005).

The same kind of indication is given by the data regarding decision-making. The overwhelming majority of the responses were assessed as Level 2, which indicates vague and generic answers based on personal experience, but connected to the central topics, i.e. motivation. This result can be explained through our knowledge of teacher beliefs that affect the development of their teaching practice. Richardson (1996) states that teacher education students enter studies with beliefs that strongly influence their learning, which are heavily influenced by their own experiences as students. The question for teacher education lies in finding ways to support the development of interpretation skills, so that student teachers would be more aware of their belief systems on the one hand and, on the other hand, engage in their classroom practices more on the beliefs based on formal knowledge, rather than on beliefs based on their personal schooling experiences. Furthermore, no responses were deemed Level 3 indicating an alternative solution supported by evidence-based reasoning and a number of responses were seen in Level 1, which indicate alternative solutions that are not connected to the topic at hand. There were some differences between the groups that had completed the SDT course and those who had not and it is clearly evident that teachers with theoretical knowledge were able to make more decisions, which corresponds with the findings from previous studies on interpretation skills and the expert-novice differences (eg. Stahnke & Blömeke, 2021). However, the fact that they still made decisions based on the noticed and interpreted events that were not connected to learnt theoretical knowledge and were not able to make true evidence-based decisions, paints a picture of an unsatisfactory level of decision-making and gives a clear indication that, in course of teacher education, deliberate practicing opportunities to develop PID-skills need to be created. Several possibilities have been highlighted in research that support the development of PID-skills, e.g. analysis of classroom videos (e.g. Van Es & Sherin, 2002; Santagata & Guarino, 2011) or using video-based blended learning environments for classroom video reflection and feedback (e.g. Prilop et al., 2021; Weber et al., 2018). Weber (2018) and Prilop (2021) with colleagues have emphasized the importance of expert feedback in developing PID-skills, noting

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that even though feedback by peers or self-reflection helps to foster PID-skills, considerable improvements only emerge in case expert feedback is offered to student teachers.

Even though the current study provided a clearer understanding of the level of teachers' PID-skills regarding need-supportive teaching, some significant limitations can be highlighted. The sample of participants does not allow to make broader generalizations. Furthermore, teacher PID-skills have not been studied in relation to need-supportive learning, so additional studies would definitely be needed to draw more profound conclusions. Teacher beliefs were not addressed in the current study, which would definitely help to understand better the development of teacher PID-skills. Further investigation would benefit from studying the interpretation and decision-making skills at greater length and creating a video-based blended learning environment to provide student teachers deliberate practice opportunities with expert feedback for the development of PID-skills for need-supportive teaching, in order to understand more profoundly the different factors influencing the development of these situation-specific skills.

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Psychological Characteristics of Transprofessional Competences of a Vocational Education Teacher

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ABSTRACT

Today, society needs educators who can respond quickly to the demands of employers and train mid-level professionals for the needs of high-tech production. In this regard, the level of professional competence of vocational education teachers is of particular importance.

This makes the training of vocational education teachers particularly crucial. The competences of various professional activities have already become demanded. A future vocational education teacher should be a researcher and practitioner, an organiser and an implementer, a manager and an analyst, a programmer and a psychologist at the same time. Transprofessionalism as an expansion of socio-professional boundaries and increased effectiveness can be a response to this challenge. The study of transprofessionalism requires special attention from researchers. Transprofessionals with developed interprofessional competences that meet real and future challenges of the digital economy, post-industrial society and digital industrialisation are required. The educational and professional communities are confronted with the problem of identifying the essential characteristics of transprofessional competences.

Transprofessionalism as a scientific category has conflicting interpretations, and researches on this issue in both Ukrainian and foreign science are sparse and not general. Moreover, the lack of holistic methodological ideas of transprofessionalism, how it is formed, and by which personal qualities is determined, makes it impossible to organise and implement the process of transprofessional's training. Our study clarifies the definition of transprofessionalism, analyses its psychological essence rather than the composition of transprofessional competences; the theoretical analysis will be used to identify the component factors of transprofessionalism that contribute to its development in the subject personality's activity.

The purpose of the study: is to identify and describe the psychological characteristics of transprofessional competences of a vocational education teacher. Research methods: theoretical analysis, questionnaire, methods of mathematical and statistical analysis, methods of interpretation.

Keywords: education, professionalism, transprofessionalism, transprofessional competences, engineering training, engineer-teacher

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Introduction

Modern global processes of scientific and technological development, digitalisation, socialisation, and ecologisation, which cover all national economies, form both new economic challenges and define new vectors of development. The emergence of such new demands in the labour market has caused the need to fundamentally update the content of vocational education based on employers' requirements and the content of the sectoral training programmes. All this can be done in the presence of relevant professional and pedagogical staff, the core of which consists of vocational training teachers, who have the basic level of professional and pedagogical training, formed as a result of implementing the principles of transprofessionalism in the educational process.

As many foreign professionologists Barr, Horsburgh, Pickard, Rasko and colleagues have noted, the necessity of transprofessionalism formation is caused by the logic of post-industrial society development: rapid change of technological modes, intensive development of information technologies require from a specialist a wider range of professional knowledge, ability to rapidly adjust to the changing conditions of professional environment and teamwork skills. New professions, which were unimaginable not long time before, are constantly appearing in the world and steadily entering our life. Robotization, uberization, the implementation of new technologies as well as the development of these and many other phenomena are forcing people to leave their usual places of work, but not the economy as a whole. The skilled labour is more in demand than ever before, contrary to popular belief. Companies and businesses need more and more people every day.

There is no doubt that the issue of the competence of a vocational teacher remains relevant and open. The activity of a vocational teacher is characterised by a professional orientation, combining two explicit and separate components: the sectoral technical and technological component and the pedagogical one. Each of them cannot be primary or secondary due to its unconditional functional obligation. In the content of vocational education and training, they should be considered only in a balanced way, including their common and specific components (Kislov, 2018).

The issues of competence formation and accordingly the transformation of the education system are considered at the present stage in almost all countries, so in this context we can say that this aspect can play the role of a consolidating trend of building a unified educational space. The level of economic development of countries, including the global economic space, which is directly related to the development of human capital, will also depend on how the issue of competence formation will be addressed and how it will be related to the modernization of production (Boiko et al., 2022). A functioning education system trains the professionals of the past. Young people are taught to go to jobs that no longer

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exist, providing future professionals with intellectual tools that have long been ineffective. That is why the percentage of unemployed people in the world is so high (Zhmai, 2018). The question of which psychological mechanisms facilitate information analysis and decision-making in the context of multiple life trajectories, and which ensure the development of pre-adaptation abilities in the early stages of personal and professional development, deserves particular attention.

The semantic concepts of "profession", "professional activity", "specialty" and "professional employment" are widely used in occupational studies. Along with these established concepts, in recent years a new term "transfession", which means a type of labour activity carried out on the basis of synthesis and convergence of social and professional competences belonging to different specialised areas, has been approved (Ialalov, 2015). The theoretical basis of transfession is multidimensionality, involving a transdisciplinary synthesis of knowledge from different sciences: natural, technical, socio-humanitarian and philosophical, and transprofessionalism is the willingness and ability to perform actions from different fields of activity (Zeer & Symanyuk, 2017).

Barr identifies the following problems in this field: the lack of a clear definition of the concepts of "interprofessionalism", "multiprofessionalism", "transprofessionalism", effective assessment tools and evidence base. Accordingly, from the point of view of this researcher, the further development of the ideas of transprofessionalism should proceed in the following directions: clarification of the semantics of terms, improvement of evaluation methodology, creation of theoretical and evidential basis of the theory (Barr, 2013).

According to Horsburgh, interprofessional (as well as multiprofessional) training should be based on certain principles. These are, first of all, learning the characteristics of related professions, understanding and seeing the common professional goals and the contribution of each profession to the final result. It is also about developing teamwork skills, effective communication and understanding not only one's own professional role but also the role of other professions (Horsburgh et al., 2001). Ultimately, this type of training provides the opportunity to practise creating well-adapted, flexible working teams with a high level of communication skills.

While Horsburgh in his work considers interprofessional and multiprofessional education as two parallel trends in learning, Harden considers multiprofessionalism, interprofessionalism and transprofessionalism as stages of transprofessional education (Harden, 1998), which are effective if a number of conditions are met: appropriate type of education, level of education and category of student, clear presentation of training outcomes, consideration of multiprofessional education as a multi-stage process.

The problem of transprofessionalism is also raised from the perspective of bringing together academics and professionals and increasing the level of

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interdependence between them. Rasko emphasises the need for a new academic specialisation that would bring together scientific and practical knowledge and enable various related professional groups to cooperate (Rasko et al., 2019).

Thus, an analysis of the literature shows that there are quite a few scientific works devoted to the problem of transprofessionalism, but most of them simply state the phenomenon, and there are relatively few specific studies.

Transprofessionalism is viewed mainly from the position of mastering different types and groups of professions, or emphasizing primarily the readiness of a specialist to work in a team. Transprofessionalism, on the one hand, is a form of professional activity organisation aimed at developing future skills, building partnership and cooperation relations between professions; on the other hand, it is a qualitative characteristic reflecting readiness and ability to master and perform activities in functionally similar professions. These academics emphasise that transprofessionalism is transcending the boundaries of one profession, enriching it with knowledge and technologies related to other professional activities, developing new key competencies enabling to find complex and unique solutions based on a transdisciplinary synthesis of knowledge and interprofessional communication (Zeer et al., 2021).

Transprofessionalism is also presented as an integral characteristic of activity that has emerged as an alternative to professionalism. The latter represents only a high level of performance of work narrowly belonging to a particular field. Transprofessionalism is distinguished by its personal content oriented towards purposefulness, overcoming, achievement, risk-taking, with a high orientation towards society without attachment to one narrowly defined sphere under the permanent influence of activity, career and motivational factors (Guzanov & Fedulova, 2019).

The phenomenon of transprofessionalism is adequate to the modern era with its revolution in the world of professions, its highest dynamics of innovation and change. However, for this phenomenon to spread effectively in society, certain conditions are necessary, above all, related to the vocational training of this kind of specialists capable of multiprofessional activities and who understand all prospects of transprofessional training in particular (Ivanchenko, 2020).

Professionals are now being replaced by transprofessionals, or "portfolio people" who are specialists capable of mastering new or related professions and who carry a unique "package" of knowledge and skills. Transprofessionals must be ready to work freely, through their own thinking and independent organisation of their activities, in different professional environments and organisational structures (Shevchenko, 2011). The basic transprofessional competencies include a narrow specialisation in a profession, the capacity for interprofessional communication, the capacity for transdisciplinary knowledge synthesis, a focus on combining basic research with practical problem solving, teamwork skills,

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continuous self-development and self-improvement, real and virtual inclusion in what has been called community of practice (professional and transprofessional networks). Transprofessionalism means a new type of professionalism: a collectively distributed ability to reflexively link and co-organise representatives of different professions to solve complex issues (Bannikova, 2021).

There is a concept in which transfession is understood as a methodological level of professionalism that unites fields of professions different (even contrasting) in content, creating new professions. Achievement of this level is associated with processes of personal self-actualization, a person's search for "life environments" that provide such self-actualization (Kabrin & Galazhinsky, 2017).

Multidimensional competences, the so-called key metaprofessional attributes, form the basis of transprofessional training (Ialalov, 2015). These include: socio-professional and virtual mobility, communicativeness, practical intelligence, responsibility, collectivism, ability to work, corporativeness, innovativeness, etc. In post-industrial society the personality itself acts as a qualified characteristic.

Transprofessionalism, as a readiness and ability to master the accelerating changes of post-industrial society, can be considered as a professional and personal phenomenon. In order to introduce it into the scientific and practical field of occupational studies, it is necessary to define the main semantic components of transprofessionalism and the possibility of its alignment with the changing present and professional future. The solution to this problem has necessitated the design of logical and semantic models of transprofessionalism as a means of pre-adaptation of a subject of activity to professional future and educational technologies of forming necessary competences (hard-, soft- and digital-skills) (Zeer et al., 2021).

Different researchers suggest different structures and models of transprofessionalism depending on the methodological foundations and specifics of the professional environment. Thus, Zeer and Symanyuk, relying on the concept of technology convergence, interdisciplinary basis and methodological multidimensional approach, have developed a logical and semantic model of transprofessionalism, which consists of five components:

1. Transprofessional orientation, focused on mastering the activities of different professional fields and putting the acquired knowledge into practice. This component of transprofessional competence model includes "self-concept", socio-professional adaptability, multidimensional identity, transprofessional value orientations and professional activity motivation.
2. The regulatory component represents psychological resources of a personality related to organization and regulation of his/her activity. The content aspects of this component are self-organization, self-actualization, self-efficacy, autonomy, and regulation of mental states.

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3. The information and communication component considers the ability of a person to navigate in the information professional environment and contains such characteristics of a specialist as socio-communicative and professional mobility, tolerance for uncertainty, reflexivity and perceptual adequacy (autocompetence).
4. Humanitarian and technological component provides knowledge synthesis from a variety of professional fields and promotes construction of individual trajectory of transprofessional development; it includes socio-cultural competence, transdisciplinary knowledge, cognitive abilities, social intelligence and reflexive-evaluation activity.
5. The interprofessional and educational component demonstrates the multidimensional nature of a specialist as a necessary quality of a transprofessional. This component is represented by interdisciplinary competence, metaprofessional qualities and key competences (hard-soft-digital-competence) (Zeer et al., 2021).

The successful performance of any professional activity is ensured by the combination (integration) of hard-, soft- and digital skills. Their ratio depends on the type of professional activity. The formation of soft-skills (competences) is a priority for the development of transprofessionalism (Bystrova et al., 2020). Irrespective of the professional qualification and apart from the domain knowledge, today's professionals need to possess a high Soft Skills quotient in order to succeed in this competitive era. Hard skills contribute to only 15% of one's success while remaining 85% is made by soft skill (John, 2009). It should be noted that while the development of hard skills in vocational training takes place in the course of studies and internships, the development of soft skills occurs spontaneously and depends more on personal qualities and individual work on each person's own development.

Thus, this logical and semantic model of transprofessionalism (Zeer et al., 2021) reflects the essential characteristics of the presented concept and allows not only assessing the formation of transprofessionalism, but also considering the factors determining the formation of students' transprofessional competences. It should be emphasized that transprofessionalism does not negate the importance of the initial, basic profession, but rather contributes to the transition beyond it, enriching it with knowledge, competencies and technologies related to other types of professional activity.

There is no doubt that the strategy of transprofessional training of vocational and pedagogical students requires the implementation of competence-based approach, which provides not a simple transfer of knowledge, skills and abilities, but focuses on the formation of creative initiative, independence, competitiveness through systematic, integrative, interdisciplinary professional training, providing solid fundamental knowledge, professional skills, practical experience,

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free mastery of the profession and orientation in the world of work (Konyakhina, 2020). Transprofessionalism of future vocational school teachers' training is already incorporated in its content a priori, it is initially reflected in the requirements for vocational education teachers, which are expressed in special multifunctional competencies, mastering which allows them to solve various problems in professional and social life. These regulations have an integrative structure, i.e. include a set of abilities of future graduates within the framework of pedagogical knowledge transfer to provide effective training of future working personnel for production sphere. At the same time, harmonious personality is provided by mastering such universal competences as interpersonal, legal, systemic, communicative, informational; and involvement in the sphere of professional relations is ensured by professional and profile-specialized competences, which take into account the nature of production activity (Guzanov & Fedulova, 2019).

Methodology

The study was conducted at Kyiv National University of Technologies and Design. The empirical sample comprised the 3-4 year students of the Fashion Industry Faculty and the Faculty of Management and Business Design, in particular those studying in the field of 015.36 Vocational Education (17 persons), 051 Economics and 075 Marketing (48 persons). The total sample of the study was 65 people.

The survey was conducted in order to determine the psychological features which ensure the development of pre-adaptation ability at the early stages of personal and professional formation, particularly, the features of students' self-actualization, the study of their self-efficacy, i. e. the confidence of a person in his potential ability to organize and carry out his own activities necessary to achieve a certain goal and motivation to succeed and avoid failure.

The methods used in the survey were selected in accordance with the principles of competence approach (Konyakhina, 2020) and the logical and semantic model of transprofessionalism of subjects of professional activity (Zeer et al., 2021). The psychological resource of the subject of professional activity, which is characterized by the level of formed skills of planning, designing, predicting and evaluating the results of activity is aimed at activating the regulatory component of this model. Essentially, regulation is a mechanism of mobilization of socio-professional potential of a subject of activity. The conscious self-regulation of the specialist's voluntary activity is of great importance in the implementation of this component. Regulatory predictors of voluntary activity include self-actualization, self-efficacy, self-organization and regulation of mental states.

The hypothesis that there can be differences in the expression level of psychological features that ensure the development of the ability to pre-adaptation in

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the early stages of personal and professional development, as components of transprofessionalism, in the studied subjects with different professional orientation was proposed.

To diagnose self-actualization peculiarities, the Jones-Krendall scale developed in 1986 by Jones and Krendall on the basis of Maslow's self-actualization questionnaire was used. Respondents answered each statement using a 4-point scale: 1 point – disagree; 2 points – partially agree; 3 points – partially agree; 4 – points – agree. The higher the total value, the more self-actualised the respondent considers himself/herself to be.

To diagnose self-efficacy, we used the Schwarzer and Jerusalem questionnaire. The self-efficacy scale consists of 10 statements, which the respondent is asked to relate to his/her activity effectiveness. The respondent's ticking of the box 'completely wrong' gives 1 point; 'rather wrong' gives 2 points; 'rather correct' gives 3 points; and 'completely correct' gives 4 points. The final result is obtained by scoring all 10 statements.

Rean's questionnaire for studying success motivation was also used. The questionnaire is designed to differentially assess two interrelated but oppositely directed motivational tendencies: desire for success and fear of failure. Separate combinations of these motivational tendencies in an individual based on their strength create a certain personality type and determine different behaviour. Respondents are asked to answer 20 questions in the questionnaire, choosing the answer 'yes' or 'no'. The respondent will receive 1 point for each key match.

These are close-ended questionnaires in terms of the nature of the answers. The advantage of closed questions in these questionnaires is the ease of data processing and the clear formalisation of the evaluation. The answers received in the course of the survey were elaborated in such a way as to maximally understand readiness for self-education activity, self-development due to which a student reaches transprofessionalism level more effectively, its formation of psychological readiness for innovative activity and personal competitiveness. Subjects participated in the study voluntarily and with sufficient information. Interviewees were informed about why the study was being conducted, how their data would be used and whether there were any associated risks, and whether anonymity was ensured.

Results

Analysing the results of the study, it was found that the "orientation of motivation" of the respondents was distributed in the following order (see Fig. 1).

The results show that success motivation predominates among the respondents. Full motivation for success is noted by 17 respondents (35.4%) from the economists' group, and 11 people (22.8%) partially agree. In the teachers'

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group, three respondents (17.6%) note motivation for success, while five people (29.4%) partially agree. At the same time, 8.4% of respondents (4 people) in the group of economists have a tendency to be motivated to fail, and also 8.4% of respondents (4 people) experience fear of failure. Failure motivation was not detected in the group of teachers, and failure motivation tendency was detected in 2 people (11.8%).
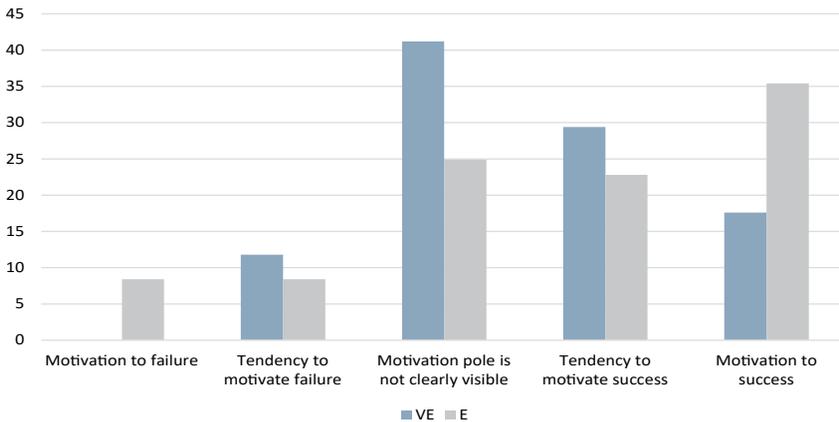
Figure 1. Parameters of "motivation orientation" between "motivation to success" and "motivation to fear of failure"

The Mann-Whitney non-parametric U-criterion was used to confirm the hypothesis that respondents with pedagogical orientation have differences with respondents with economic orientation in terms of the degree of success motivation expression during the comparison of two independent samples. In order to study success motivation indicators, a comparative analysis of its expression among specialists in different groups of professions (teachers and economists) was conducted, the results of which revealed that the empirical value of Uemp (4) is in the zone of uncertainty, which does not confirm our assumption (see Fig. 2).

Only 2 respondents (4.2%) from the economists group and 1 person (5.9%) from the teachers group showed a high level of self-efficacy. Significantly more students have an above average level of self-efficacy (41.1% of the group of teachers, 47.9% of the group of economists). There are also high indicators of the average level of self-efficacy (47.1% of the group of teachers, 35.4% of the group of economists). It should be noted that in our sample there are significantly fewer students with a low level of self-efficacy.

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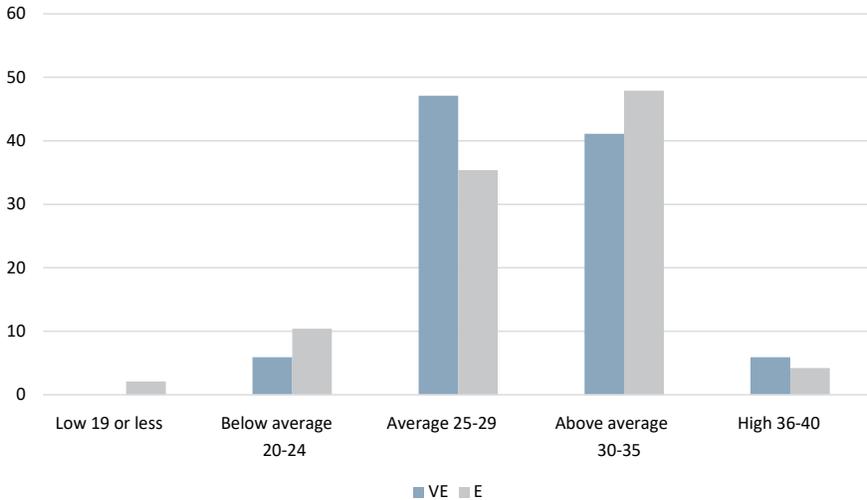
Figure 2. Shows the results of our study regarding students' self-efficacy indicators

Only 10.4% of the respondents (5 students) in the group of economists had a below average level and also 2.1% of the respondents (1 person) had a low level of self-efficacy. In the group of teachers, low level of self-efficacy was not identified, and 1 person (5.9%) has a level below average.).

In order to compare self-efficacy indicators, a comparative analysis of its expression among professionals in different groups of professions (teachers and economists) was conducted. According to the results of Mann-Whitney nonparametric U-criterion, it was found that the empirical value of Uemp (7) is in the zone of insignificance, which does not confirm our assumption about the prevalence of higher self-efficacy indicators in the respondents with pedagogical direction of activity.

Analyzing the results of the study, it was found that the parameters of self-actualisation indicators in the respondents were distributed in the following order (see Fig. 3).

A high level of self-actualization is noted by 2 respondents (4.2%) from the group of economists, while 38 people (79.2%) have a level above average. In the group of teachers, a high level of self-actualization is not revealed, 14 people (82.4%) have a level above average. At the same time, 16.6% of respondents (8 students) in the group of economists revealed an average level of self-actualization and also 17.6% of respondents of teachers (3 students). Low and below average levels of self-actualization were not found in both groups.

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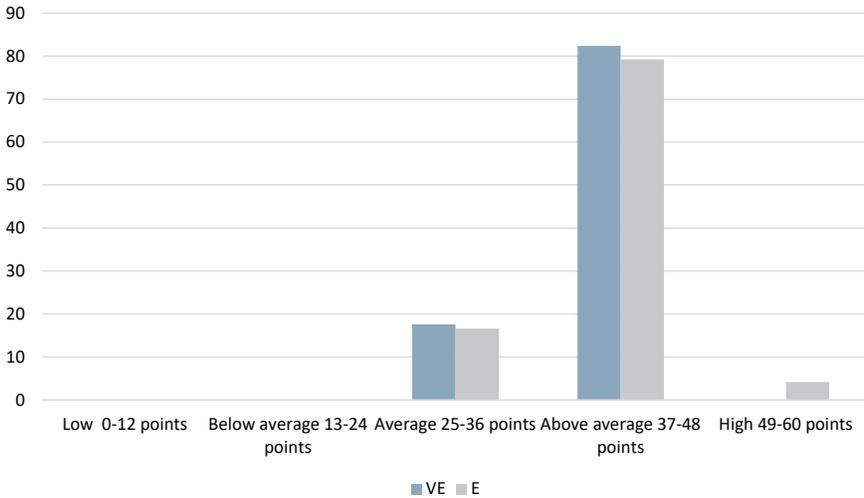
Figure 3. Parameters of self-actualisation indicators

In order to study self-actualization indicators, we also conducted a comparative analysis of its expression among professionals in different groups of professions (teachers and economists). The Mann-Whitney nonparametric U-criterion revealed that the empirical value of Uemp (10) is in the zone of insignificance, which does not confirm our assumption about the prevalence of higher self-actualization indicators in the respondents with pedagogical direction of activity.

Discussion

A great importance in the development of a personality belongs to the personality itself, its activity, which manifests itself in the desire to go beyond normative requirements and prescriptions, in the phenomena of suprasituational and supra-role initiative. Active position, continuing education, self-organisation, self-education, self-efficacy and self-actualisation are the factors determining the formation of a transprofessional (Shevchenko, 2011). Student age is characterised by the achievement of the highest results, based on all the previous processes of biological, psychological and social development. The qualities that were lacking in high school like purposefulness, determination, perseverance, independence, initiative and self-control – are noticeably strengthened. (Zhdanyuk, 2017).

Success motivation is the mobilisation of all a person's resources, concentration and discipline. A person with success motivation thinks positively, and his or her direction in life is primarily towards success, towards discovering his or her personality in the projects conceived, rather than avoiding failure (Hedzyk et al., 2022).

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Already the classic Yerkes-Dodson law establishes the dependence of performance on the strength of motivation. It follows: the higher the strength of motivation, the higher the performance (Yaremchuk, 2017). "Motivation orientation" is a momentary programme that operates in all spheres of human activity, ensuring the formation of the psychological readiness of the individual to innovative activity. The competitiveness of individuals in a rapidly changing environment depends on it (Hedzyk et al., 2022). Therefore, one aspect of the study is the study of success motivation in students. Many respondents (22.8% in the group of economists and 29.4% in the group of teachers) have a moderately high level of success motivation. Young professionals prefer a moderate level of risk taking, they are success-oriented, goal-oriented, and strive to perform at a high level. Complete motivation for success is noted by 35.4% of respondents from the economists group and 17.6% of respondents from the teachers group. All of them belong to the group of highly effective managers with a high level of risk appetite. They are motivated to succeed, to achieve their goals and prefer to work hard to get a result. The activity of students of different groups of future professions (teachers and economists), is based on the hope for success and the need to achieve success. Such people are confident in themselves, in their abilities, responsible, proactive and active. They are characterised by persistence in achieving a goal.

Part of the respondents (10 people in two groups) experience a fear of failure or a tendency to be motivated to failure. Generally, this motivation is based on the idea of avoidance and the idea of negative expectations. When starting a business, a person already fears possible failure in advance, thinking of ways to avoid this hypothetical failure rather than ways to achieve success. People motivated to fail are usually characterised by increased anxiety and low self-confidence. They try to avoid responsible tasks, and may fall into a state of near panic when faced with highly demanding tasks. At least in these cases, their situational anxiety becomes extremely high. All this, however, may be combined with a very responsible attitude to the business.

One of the central properties of personality is self-efficacy as a person's confidence in his/her ability to control the events of his/her own life and to achieve the desired goals. A person's beliefs about their personal effectiveness influence the way they choose to act, the effort they put in, and how long they withstand obstacles and setbacks. Self-efficacy is a productive process of integrating cognitive, social and behavioural components to implement an optimal strategy in different situations. There are three different levels at which perceived self-efficacy plays an important role in academic development. Students' beliefs about their ability to regulate their own learning and master academic activities determine their aspirations, level of motivation and academic achievement (Bandura, 1993). People with high self-efficacy expect success, so their activities always

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produce positive results. People with low self-efficacy constantly doubt themselves and expect to fail, so they are often haunted by failure. It's a vicious cycle, thinking about failure, you get failure, and the result is a drop in self-esteem. Such people pay too much attention to their shortcomings and are constantly engaged in self-criticism about their incompetence.

Our study has shown that only 3 students showed a high level of self-efficacy. But significantly more students have above average and average levels of self-efficacy. However, given that the vast majority of students do not yet have direct experience of professional activity, above average self-efficacy can be considered as a manifestation of belief in their own strength, the ability to control a new situation, which indicates the readiness of students to develop professional self-efficacy.

Convergence in the field of psychological development initiates the development of flexible means of adaptation and pre-adaptation to the changes in social-humanitarian, natural-science and technical disciplines (Baksansky, 2014). By determining interdisciplinary and supraprofessional interactions, convergence acts as a factor of designing and approving a fundamentally new phenomenon in professiology – transprofessionalism. Self-actualization, based on the realization of one's personal and professional potential, is the factor of its achievement.

Researchers of the self-actualization phenomenon in humanistic psychology distinguish various components and characteristics of a self-actualized, psychologically healthy, mature personality striving for self-actualization, especially without distinguishing these concepts meaningfully: expanded sense of self, positive self-image, holistic approach to life, activity orientation, realization of creative abilities, respect for self and others, low inner conflict, sense of subjective freedom, personal integrity and existentiality (Kolodyazhna, 2018).

As a rule, constructive self-actualisation gives satisfaction to the subject from the process of activity and self-development, allows successfully setting new goals and mastering new milestones. A high level of constructiveness indicates rapid and high quality mastery of specific actions, techniques, ways of self-expression and mastery of new specializations. In our study, 83.4% of respondents in the group of economists and 82.4% in the group of teachers had an above-average level of self-actualization. At the same time, 16.6% of respondents in the group of economists and 17.6% of respondents in the group of teachers revealed an average level of self-actualization. The levels of low and below average indicators of self-actualization were not found in both groups of respondents. Students of different training profiles mainly achieve high or medium levels of self-actualisation. They are able to live in the present and rely on themselves rather than on the expectations or assessments of others. The students share the values of a self-actualising personality and have a high need for learning and self-knowledge.

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This result confirms the theoretical findings of scholars in the field of transprofessionalism. Namely, that transprofessional competences are basic for any type of profession and also ensure productivity of various activities regardless of the field of professional interests (Tretiakova, 2019).

Consequently, transprofessional competences should not differ among representatives of different occupational groups. Thus, the hypothesis that there are no statistically significant differences in the level of expression of psychological features which ensure the development of the ability to pre-adaptation at the early stages of personal and professional development as components of transprofessionalism in the respondents with different professional orientation has not been confirmed.

Conclusions

The focus on transprofessionalism entails the need to find new forms and technologies of vocational education, taking into account the individual characteristics of students, actualizing their desire for conscious, proactive goal-setting and self-actualization in a varied educational and professional space. Creation of practice-oriented educational and production environment, which promotes the application of transprofessional competences and practical mastering of the obtained knowledge, becomes possible due to the use of practical forms of learning in the educational process, aimed at activating students' activities and obtaining particular results in the formation of their practical experience. Students' participation in real projects commissioned by external organisations, grants, professional competitions enhance their interest in self-education activities and significantly increase the level of professional competences being formed. Industrial practice, conducted in professional organizations, allows to expand theoretical knowledge, promotes reflexive thinking. At the same time, a significant motivation incentive is the understanding of the impossibility to apply the knowledge obtained during theoretical training in practical professional activity without reflection. Students' participation in conferences and round tables also increases the level of professional competences. A prerequisite is the student's participation with a report and the involvement of representatives of employers to discuss professional issues on the report.

We believe that in order to increase the level of students' preparation for successful competitive professional activity in the global labour market, it is advisable to create a system of psychological support for professionalization of future specialists in universities in order to identify the main problems related to the initial stage of professional career and to facilitate their positive solution.

The obtained results should be considered as preliminary, requiring a longer research.

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Teachers with Different Educational Background and Their Self-Efficacy

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ABSTRACT

The presented text responds to the repeated opening of the topic of qualification prerequisites for the teaching profession. The aim of the work is to measure and compare teachers' self-efficacy among teachers with different educational backgrounds. The main research question is how preparation for the teaching profession is mirrored in teacher self-efficacy. The research sample in this study consists of Czech teachers ($n = 377$) with different educational backgrounds (teachers' educational programs from faculties of education, faculties of sciences, faculties of arts) also included those who have not pedagogical qualification (they have degree from university but not in teachers program). Quantitative measurement of teacher self-efficacy took place through the adapted Norwegian teacher self-efficacy scale (NTSES) for the Czech Republic, whose internal structure was verified by confirmatory factor analysis (CFA) and reliability measure by McDonald's Omega and Cronbach's Alpha. Statistical procedures used for data analysis were t-tests and ANOVA tests. The results in the text represent partial results from an ongoing research and suggest that teacher self-efficacy may be related to teachers' educational background and that Czech version of NTSES is fit to be used for another measure of teacher self-efficacy in the Czech educational environment. Bigger and more representative sample is needed for the further research for more evidence of possible effect of educational background to teachers' self-efficacy.

Keywords: adapted research tool, confirmatory factor analysis, NTSES, self-efficacy, teaching programmes, teaching qualification

Introduction

The Teaching Profession Now

Do we need teachers of quality, or qualified ones? This is the question Spilková & Wildová (2014) begin their post with. The question very much reflects the discussion over the past thirty years (not only) in the Czech Republic. There

are some reasons for why there is a lack of fully qualified teachers of good-quality in Czech schools: low prestige of the occupation felt by teachers themselves (Czech school inspection, 2020), high average age of teachers (Ministry of Education Youth and Sports, 2019), a high drop-out of young teachers (Ministry of Education Youth and Sports, 2019), and insufficient interest in the study of education (Korbel & Prokop, n.d.). All those possible reasons why there is a lack of high-quality and fully qualified teachers in Czech schools.

This particular problem is of different intensity in regions, in some of which it seems more critical than in others. It is also confirmed by heads of schools who took part in the TALIS research (2018). In the most critical region, up to 99% head teachers confirmed that the lack of qualified teachers is an obstacle for quality teaching (28% said to a great extent, 56% rather yes, 15% to some extent). In the least critical regions, up to 60% headteachers claim it is no obstacle at all.

The persisting absence of the teacher standard and unitary concept in the preparation of teachers does not simplify the situation. In the recent years, discussions on how to solve this situation in education have been opening again. Some suggestions focus on how to increase motivation for this profession (growth of salary, which has already been realised), however, some open the previous suggestions to lower demands of qualifications of teachers. Demands of qualification, quality preparation, and professionalism of teachers is connected to the problems mentioned above. Results from a research from Poland may be a warning. There are even such opinions in the public that everyone can teach for the reason that everyone has children, therefore they are able to do such a job (Smak & Walczak, 2017).

What does it mean to be a qualified teacher, though? According to the Act No. 563/2004 Collection of Law, a qualified teacher is a graduate of an MA teaching program, or a different MA study programme and additional pedagogical education. The qualification demands then count on teachers having gone also through education in psychology and pedagogy, which is considered to be an essential premise for the quality of teaching (Wiliam, 2018; Salman & Adeniyi, 2012; Machingambi et al., 2018).

Options of How to Become a Teacher

In the entire section I will present acquiring qualifications for teachers at lower secondary schools (6th to 9th grade).

Preparations of Teachers at Universities

According to the Act No. 563/2004 Collection of Law, a finished BA programme in education is not sufficient for a graduate for the teaching profession. It is not until finishing an MA programme that a graduate is allowed (qualified) to teach.

One option which is preferred (by the Act No. 563/2004 Collection of Law) to acquire the qualification for teaching is to study a programme of education at university. These programmes are mostly offered at faculties of education, but not exclusively (usually also at Science, Sport, or Philosophical ones). Faculties of Education usually offer BA programmes in which students choose a programme or two focusing on education. During their studies, they go through courses of their chosen programme, didactics of their study programme, pedagogy, psychology, and often also some practice at schools (e.g. as an assistant of a teacher). Different faculties have different courses, amounts of lessons, or compulsory practice, and due to the absence of obligatory standards, the differences can be tremendous. The absence of standard can also be observed at other faculties which offer BA programmes focusing on education. Pedagogy and psychology, sometimes also didactics, are not studied in depth as focus is on knowledge of their study programme.

MA study at faculties of education usually offers lower secondary education programmes, or lower secondary and secondary education programmes. The study also consists of courses of the chosen programme, pedagogy, psychology, didactics, and practice at schools. Basically, the same option is offered at other faculties which have accredited programmes for teachers, but they usually focus on education for secondary schools. As with BA study programmes, MA programmes are also different one from another at different faculties or universities, which results in possible situations of two teachers of the same programme from different universities not having the same knowledge. Finishing an MA programme of education makes a graduate qualified for the teaching profession. The system allowing this has been criticised by many experts (Spilková & Dvořáková 2004) for a long time. The problem lies in the fact that, acquiring the qualification to teach is available to any graduate whose BA study programme did not even focus on education and whose MA programme contained only minimal amount of pedagogy and psychology courses, which is at complete odds with the aims to professionalize this profession.

Alternative Joining of Profession

According to the Act No. 111/1998 Collection of Law, universities in the Czech Republic can also accredit courses in life-long education. These courses can also lead to acquiring qualification to teach (Act No. 563/2004 Collection of Law). The courses are for MA graduates of all programmes who want to (or have to) supplement their teacher qualification. The courses usually take two to three semesters and take place mostly at the weekends so that even full-time working students can join them. After finishing, a student should have knowledge of basics of pedagogy, psychology, didactics, and should have had some practice.

A person teaching without having gone through one of the above described options does not meet the requirements of qualification. How is it possible then that there are such teachers? Act No. 563/2004 Collection of Law gives head teachers (or schools) an option of employing teachers without qualification for an inevitable time and amount of lessons taught – as long as it is proven that the position cannot be taken by a fully qualified teacher. In 2019, there were 7% unqualified teachers at lower secondary schools; the range was between 2.5% and 20% in regions (Ministry of education youth and sports, 2019).

Summary

Current problems in the teaching profession are undoubtedly connected with preparation for the job. The absent standards and huge differences in preparation of teachers may have as a consequence a different readiness for teaching. In spite of that, options to lower qualifications demands are still being discussed, and in the political discourse, an alternative joining the profession is getting in the spotlight – life-long education courses. This is a quicker, and cheaper for the country, option of joining the profession. Stakeholders want to hear no arguments claiming that two semesters of a course, which is not even in a day form, cannot substitute a proper study programme. Pedagogical and psychological preparation is pushed to the background, which is at odds with research data (Machingambi et al., 2018; Kan, 2015) showing that full qualification including education in pedagogy and psychology is immensely important for a job of a teacher.

Teacher Self-efficacy

In the TALIS 2018 research, many headteachers mentioned that a lack of unqualified teachers is a complication. In the same research, teacher self-efficacy was also examined. Compared to other European teachers, the Czech ones were significantly below average. One of the lowest results among the countries were in all three areas of examination: motivation and active involving pupils, class management, teaching methods. The biggest gap was in motivation and active involving pupils. This area demands that teachers have certain pedagogical or pedagogical and psychological competencies, which differ in preparations of teachers, and in the case of unqualified teachers, these competencies are absent. It is not known whether unqualified teachers also participated in the 2018 TALIS research, however, due to them being at lower secondary schools, the chance is they were some of the participants. This might have been one of the factors of lower self-efficacy in comparison to participants in other countries.

Naturally, teacher self-efficacy does not reveal real efficiency of teacher, but only how they subjectively perceive their efficiency, meaning their capability to manage individual situations (Gavora et al., 2020; Bandura, 1997; Ninkovic &

Knezevic-Floric, 2018). As a lot of research suggests, teacher self-efficacy is also connected to real efficiency in the teaching profession, quality of teaching, and their pupils' or students' results (Tschannen-Moran et al., 1998). It is this connection between the teacher self-efficacy and their real efficiency that initiates a lot of research in both the Czech Republic and abroad (some of which will be discussed later in this paper). Their results may represent useful outcomes, which can change education of teachers and the profession itself.

However, teacher self-efficacy is not constant. It can develop based on personal experience through practice or changes in educational, cultural, or social context (Smetáčková et al., 2017). Gavora (2008) argues, teacher self-efficacy starts to form already when joining the profession, and over time, it becomes individual and more stable self-efficacy. Since the first practice of Czech (future) teachers is during their studies, it is possible to talk about some development of their own teacher self-efficacy already at that time. These claims are in agreement with the Bandura theory (1997) describing that creating self-efficacy is based on these four sources: experience with fulfilling a task, social modelling, convincing and encouraging by other people, and the ability to regulate signs of stress. Based on data from previous research, these four sources also create teacher self-efficacy (Tschannen-Moran et al., 1998).

Quantitative Research and Research Tools to Measure Teacher Self-efficacy

Interest in examining teacher self-efficacy meant also creating many research tools, which would match, to the greatest possible extent, both the Bandura theory and real teacher's activity. The first tool I must mention is Teacher's efficacy scale – shortened as TES (Gibson & Dembo, 1984), which has been used by many researchers around the world for many years (Deemer & Minke, 2010; Brouwers & Tomic, 2003), and which has also been adapted in the Czech Republic. In the Czech Republic, it was adapted by Greger (2011), in Slovakia by Gavora (2011). The original TES consisted of thirty items and two dimensions – Personal teaching efficacy and General teaching efficacy. The latter one became an object of criticism for its inconsistency in theory (Gavora et al., 2020). There was also a discussion about different results of factor analysis done by authors trying to adapt and use the TES in a different cultural context (Deemer & Minke, 2010; Denzine et al. 2005). Since psychometric characteristics did not reach too high merits either, a shortened 16-item version was created later, and slightly better results were achieved. The 16-item TES was adapted by Gavora (2008) in Slovakia, who, however, also stated that psychometric characteristics were insufficient (34% data explanations and reliability α 0.76 and 0.45).

At the moment, there are two research tools to measure teacher self-efficacy which are worth mentioning, according to Smetáčková et al. (2017). Specifically, The Ohio State Teacher Efficacy Scale – shortened as OSTES (Tschannen-Moran

& Hoy, 2001) and the Norwegian Teacher Self-Efficacy Scale – shortened as NTSES (Skaalvik & Skaalvik, 2007). The OSTES (Tschannen-Moran & Hoy, 2001) created a 24-item scale consisting of three dimensions – Efficacy for student management, Efficacy for instructional strategies, and Efficacy for classroom management. Inconsistency in dimensionality, however, also appeared in this tool. When students of education were added in the sample, factor analysis only revealed one factor which was explored in the version adapted by Gavora as well (2011). While in unidimensional dealing of Tschannen-Moran & Hoy (2001) there was the high – 75% – data variety explained, Gavora (2011) only reached 44.6%. Fluctuating factor scale of the TES and OSTES tools, regularly adapted in more countries, brought questions about validity of the tools. As a result, many researchers decided to create their own scale, which they could tailor to their needs (Gavora & Wiegerová, 2017).

A new tool to measure teacher self-efficacy was also constructed by Skaalvik & Skaalvik (2007), who had the ambition to construct a multidimensional tool, which would fit more a complexity of the teaching profession and at the same time Bandura requirements (Skaalvik & Skaalvik, 2007). Their tool – NTSES – consists of 24 items and six factors. The tool contained the dimensions (factors) as follows: Instruction, Adapt instruction to individual needs, Motivate students, Maintain discipline, Cooperate with colleagues and parents, Cope with change. Factor analyses (exploratory and confirmatory) confirmed good psychometric characters of the scale – for an intended 6-dimensional structure. The scale was firstly verified on a sample of 244 teachers and later on an extended sample of 2249 teachers (Skaalvik & Skaalvik, 2010) and in both research samples, rather high explained variance (60%+) and reliability in all dimensions (0.74–0.91).

A promising constructed validity of this tool lead also to cultural and language adaptations (Avanzi et al., 2013; Khezerlou, 2013; Djigic et al., 2014), which confirmed 6-dimensional structure and good psychometric characters. Good psychometric characters were also confirmed in a Polish research (Baka, 2017), where the suitable solution turned out as 3-dimensional. In the mentioned research though it was only a language adaptation, not a cultural one, as its part would also be a change in the content and deeper discussion with the target group. This may be exactly one of the reasons why the factor structure differed from the above mentioned research. A similar problem was encountered in Sweden, too (Brickman & Olsson, 2021), but the researchers reflect absence of deeper cultural adaptation in the discussion.

Summary of the Introduction

Since the 1990s, the situation in the teaching profession has been discussed in the Czechia. Low interest in the profession, absence of standards, different approaches in preparations of students of education, but also rather a big number

of unqualified teachers at schools – national and foreign research point at these problems. Absent concept and oftentimes also pedagogical preparation of future teachers can relate to low self-efficacy of Czech teachers, which was proven in the TALIS research in 2013 and 2018 (Czech school inspection, 2020).

Also for this reason, it is necessary to examine the teacher self-efficacy deeper and try to reveal areas in which teachers think they are behind, and search for reasons behind it. In our region, teacher self-efficacy has been analysed several times, using even new, own scales, or adapted verified foreign ones. From the foreign ones being presently used, the NSTES tool seems to be suitable since it achieves good psychometric characters even in different cultural backgrounds (Liddy, 2018) and catches quite a wide range of activities of the teaching profession, and is constructed according to the Bandura theory and recommendations. These were my reasons for adaptation and usage of the NTSES, which I describe later in this text.

Methodology

Aims of the Research and Hypotheses

Data presented in this paper represent partial results from an ongoing research with data yet being collected. The aim of this research is to double check the functionality of the NTSES tool in the Czech context and contribute with new empirical data to this still topical discussion in the Czechia – whether pedagogical education and on which level is essential for teachers.

The main research question: How is preparation for the teaching profession mirrored in teacher self-efficacy?

- Hypothesis 1: Experienced teachers have higher self-efficacy than less experienced teachers.
- Hypothesis 2: Teachers with pedagogical education have higher self-efficacy than those without pedagogical education.
- Hypothesis 3: Teachers who graduated at Faculty of Education have higher self-efficacy than those who studied their programmes at a different faculty.

Research Tool – Czech Version of NTSES

I have chosen the NTSES tool for my research (Skaalvik & Skaalvik, 2007), which has been adapted before, or researchers from other countries tried to (Avanzi et al., 2013; Khezerlou, 2013; Djigic et al., 2014; Brickman & Olsson, 2021; Baka, 2017). As for results of its adaptations, I have already written about them in the first part of this paper.

Several independent translators worked on translation of the original NTSES from the English version to Czech, which is according to tradition and recommendations (Orcan, 2018; Gudmundsson, 2009). Four translators with C1 to C2

level English worked on the translation. They were: a psychologist, a teacher, a student of English, and a Ph.D. candidate in educational sciences. The translations were fine-tuned in cooperation with one of the translators and two experts from university. Subsequently, I consulted the items with practicing teachers; we identified problematic questions, which they did not quite understand, and in cooperation with a university expert, those questions were either changed or divided into two so as to be clearer. In case of reverse translation, the translation would not make sense due to the change of formulations of some questions. I do not find absence of reverse translation to be problematic, since several authors warn that reverse translation is insufficient (Epstein et al., 2013; Schendel & Tolmie, 2016; Gudmundsson, 2009) because in the cultural adaptation, it is oftentimes necessary to change the formulation or content (Kara et al., 2006 Delgado-Lobete et al., 2021). What is more, evidence suggest that it is appraisal by experts, which was followed in this case, that is more significant than reverse translation (Epstein et al., 2013).

What followed was verifying individual items and verifying also psychometric characteristics of the tool. Pilot testing was conducted on teachers in the Czech Republic ($n = 260$), with data after cleaning (of those who are students, not yet teaching at schools) being used in this research too ($n = 243$). After collecting pilot data, a Principal component analysis (PCA) was made. The analysis explored six factors corresponding to the previous NTSES. Some duplicate questions were taken out of the tool (those with better characteristics were kept), and then I came to confirmatory factor analysis (CFA). The analysis confirmed exploratory (and expected) structure of the tool and its suitable psychometric characteristics. In the case of an adaptation, using EFA/PCA and CFA is also suitable and common (Orcan, 2018). To verify reliability, McDonald's omega calculations were used, which is a recommended calculation for a multidimensional tool (Dunn et al., 2013). The tool proved to be reliable and valid both constructively and factually, so I could continue using it for collecting data.

The final look of the research tool consists of 27 items divided into six dimensions: instruction, adapt instruction to individual needs, motivate students, maintain discipline, cooperate with colleagues and parents, cope with change. These six dimensions explained 68.2% of variance and reliability of every dimension was ω ≥ 0.800 (whole scale ω = 0.934). Results of CFA from pilot testing is presented in Table 4. Respondents marked on a five-point Likert scale how confident they are about their abilities.

Research Sample and Data Collection

There were two rounds of data collection. In the first one, it was primarily to verify the psychometric characteristics of the tool, possible changes, or in case of its insufficient characteristics, change of the tool. The sample consisted

of teachers in the Czech Republic (n = 243), who were asked to participate in a Facebook group associating Czech teachers. A condition for filling in the online scale was to be employed as a lower secondary school teacher, or a grammar school teacher teaching respective grades.

After verifying the research tool, I launched collecting research data from attenders of complementary pedagogical education. All faculties offering such education were addressed. One department denied a data collection, one did not open their programme for a lack of frequentists. In the end, data collection was at seven faculties opening qualification courses for teachers. At all departments, data collection was at the beginning of courses. All attenders of these courses were addressed too. Data were collected primarily in person with my being in the lecture. In connection with the COVID-19 pandemics, data were collected online at some universities, though.

Response rate of the questionnaire was between 20–70% at individual faculties, with the total number n = *134. More detailed descriptions of respondents can be found in the following* tables.

As can be seen in the tables above (Table 1, Table 2, Table 3), respondents were a heterogenic group with different education, length of practice, and sex. Interestingly and surprisingly, ratio between men and women copies the real ratio in educational field in the Czech Republic.

Table 1. Educational background

Faculty of Education	Different faculty – teaching programme	Non-teaching programme	Together
160	49	168	377

Table 2. Length of practice

Practice during study	Max. 1 year	1.1–3 years	3.1–5 years	5.1–10 years	10.1 and more years	Together
87	59	59	27	28	117	377

Table 3. Sex

Male	Female	Together
75	302	377

Ethical Aspects

Before the NTSES adaptation, I had contacted Professor Skaalvik via e-mail to enquire whether I would be allowed to try an adaptation in the Czech Republic and whether I could continue using his tool in my research. Professor Skaalvik agreed with both the adaptation and the research usage of the NTSES and granted me a permission via e-mail. All collected data are anonymous, with no identification data. Participants took part voluntarily, with no reward, and with their agreement to use their data for other research and educational purposes. Their agreement was confirmed electronically in the data collection questionnaire. In case of some of them did not confirm their agreement, the questionnaire did not register their answers.

Data Analysis

After some basic adjustment of data I moved to their analysis. Because my sample was tremendously extended and it was data collection after pilot testing, I firstly wanted to verify inner structure of the tool and reliability of measuring again – whether the indexes are consistent. I did the calculations in SPSS and JASP. I firstly did CFA calculations, which were to verify the inner structure of the research tool on a bigger sample ($n = 377$) of teachers in the Czech Republic. Other authors who adapted the tool to measure teacher self-efficacy proceeded in a similar way (Ninkovic & Knezevic-Floric, 2018; Avanzi et al., 2013; Klassen et al., 2009; Dilekli & Tezci, 2020). I entered CFA with a six-dimensional model, which matched the original tool and also results from the pilot testing. There were 27 items in six dimensions with four to six items in each dimension. I was watching important indicators – Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Normed chi-square, Root mean square error of approximation (RMSEA), Standardized root mean square residual (SRMR), factor loadings a p-values and correlations between individual dimensions. After that, I compared that with a unidimensional model and checked Akaike (AIC) and Bayesian (BIC) measured values.

To calculate reliability of the whole scale and also of the individual dimensions, I used McDonald's omega and Cronbach's alfa. It seems to be more suitable to use McDonald's omega for multidimensional tools (Dunn et al., 2013), but I also publish results of Cronbach's alfa, which was used in most teacher self-efficacy research in the past, to be able to adequately compare them with previous studies. Then, I moved to verifying hypotheses using ANOVA calculations and associated post-hoc tests, or eta-squared calculations. I did some calculations using t-tests and then measured the effect size of Pearson's r.

Results

Verification of the NTSES Adapted Tool

CFA confirmed the pilot testing results, when the six-dimensional model seemed to be the most suitable one. In comparison with the unidimensional model, it achieved more than 3000 fewer AIC and BIC points, which suggests this is a more suitable model. Other calculations (presented in Table 4) also prove the suitability of the six-dimensional model. CFI and TLI achieved more than 0.9 value, which is considered a good score (Meschede & Hardy, 2020; Lewis, 2017). RMSEA (0.06) and SRMR (0.05) also achieved acceptable values (Lewis, 2017).

Table 4. Results of CFA

Fit measures	Value	Value (pilot testing)
CFI	**0.917**	0.917
TLI	**0.906**	0.905
RMSEA	**0.06**	‹ 0.05
SRMR	**0.05**	0.057

Factor loadings of two items were narrowly bellow 0.5 (0.471 a 0.485), which should mean consideration whether to keep them (Awang, 2012). However, given their importance and a narrow margin of tolerance, I decided to keep them. Other factor loadings were between 0.53 and 0.95, which are acceptable to good values. These results are significant on p-value (p ≤ 0.001). The ratio of the chi-square statistic to the respective degrees of freedom (normed chi-square) is 2,38, which also means suitable value (Hooper et al., 2008).

Reliability of measurement is proved by McDonald's omega and Cronbach's alfa's results. Instruction (ω = 0.815; α = 0.812), Adapt instruction to individual needs (ω = 0.853; α = 0.851), Motivate students (ω = 0.800; α = 0.794), Maintain discipline (ω = 0.912; α = 0.911), Cooperate with colleagues and parents (ω = 0.821; α = 0.818), Cope with change ω = 0.815; α = 0.814) and the whole tool (ω = 0.934; α = 0.933). Test results of the reliability are comparable with results of the original NTSES and its successfully adapted versions abroad (Skaalvik & Skaalvik, 2007; Avanzi et al., 2013), and even achieve higher values than an adapted version from Serbia (Djigic et al., 2014).

Teacher's Self-efficacy

As can be seen in Table 5, the researched sample of teachers achieved average total teacher self-efficacy 3.69 (on a five-point scale). The strongest confidence in their own abilities was measured in the Instructions dimension,

in which the average self-efficacy was getting close to the maximum. Given the average, standard deviation is not too high, as is also proved by Coefficients of variations.

Table 5. Teachers' self-efficacy results

	N	Min.	Max.	Mean	Std. Deviat.	Coeff. of Variation
Factor 1	377	1	5	4.04	0.63	15.52
Factor 2	377	1	5	3.51	0.71	20.10
Factor 3	377	1.5	5	3.53	0.69	19.60
Factor 4	377	1	5	3.32	0.96	28.86
Factor 5	377	1.25	5	3.89	0.71	21.02
Factor 6	377	1.2	5	3.83	0.69	17.98
Overall SE	377	1.79	5	3.69	0.55	14.96

Hypothesis 1: Experienced teachers have higher self-efficacy than less experienced teachers.

To prove this hypothesis, I divided the sample into two groups: inexperienced with 0–3 years of practice ($n = 205$) and experienced with more than 3 years of practice ($n = 172$). On average, experienced teachers achieved higher total self-efficacy (3.91) compared to inexperienced colleagues (3.50). This difference was rather significant ($p = <0.001$) and with medium applied force ($r = 0.37$). The null hypothesis can be rejected then.

Since collected data offer a deeper analysis and therefore finding out differences among subcategories based on experience, I continued in the analysis. I did the analysis using ANOVA calculations and post-hoc test. Teachers' answers were divided based on their experience (as is in Table 2). The ANOVA results suggest what t-test had revealed before, which is that it is highly unlikely that there would not be significant differences among the groups ($F = 14.522$; $p = <0.001$). Post-hoc test suggests that division into inexperienced (0–3 years of practice) and experienced (more than 3 years of practice) seems to be right. The least experienced teachers have significantly ($p = <0.05$) lower self-efficacy than teachers with more than three years of practice, and teachers with more than ten years of practice have significantly higher self-efficacy than teachers with shorter, maximum equal to three years of practice. Length of practice and amount of experience explain 16.4% variability of the total teacher self-efficacy (Eta-squared).

Hypothesis 2: Teachers with pedagogical education have higher self-efficacy than those without pedagogical education.

To verify this hypothesis, I used Independent Samples T-test calculation, in which I compared resulting self-efficacy of teachers with pedagogical education ($n = 209$) and teachers without pedagogical education ($n = 168$). When it comes to teachers with pedagogical education, I did not distinguish between the faculties they studied. Slightly higher self-efficacy was achieved by teachers with pedagogical education (3.7 compared to 3.67). This result, however, was not significant, hence I cannot reject the null hypothesis; a slight difference discovered in data is a coincidence (Rabušic et al., 2019). Except for one dimension (Instructions), the differences were insignificant even in individual factors of teacher self-efficacy. In the Instructions dimension, teachers with higher pedagogical education achieve higher self-efficacy (4.11 compared to 3.95), and the results are significant with ($p = 0.013$). Pearson's r is low in this case ($r = 0.13$), meaning that the difference and the effect are small (Rabušic et al., 2019).

Based on finding out and level of suspicion that results can be distorted even by an average higher experience of teachers with pedagogical education, I decided to compare these two groups and exclude the more experienced teachers. Criterion for less experienced teachers was set as 0-3 years ($n = 205$). Inexperienced teachers with pedagogical education ($n = 75$) had lower total self-efficacy than inexperienced teachers without pedagogical education ($n = 130$) in values 3.343 and 3.596. The difference among these groups is significant ($p = <0.001$) with small effect size ($r = 0.245$).

Hypothesis 3: Teachers who studied at Faculty of Education have higher self-efficacy than those who studied education at a different faculty.

To verify this hypothesis, I chose Independent sample T-test. Teachers who studied at Faculty of Education ($n = 160$) achieved lower self-efficacy than those who studied an education programme at a different faculty ($n = 49$), values being 3.65 compared to 3.89. This difference is significant ($p = 0.011$) with a small effect size ($r = 0.175$). The null hypothesis is not rejected then. There is, indeed, a difference among the examined groups, however, it is in a relationship contrary to expectations. Higher total self-efficacy but also in individual dimensions is achieved by teachers who studied education at a different faculty than Faculty of Education. Nevertheless, it is important to say that most teachers in this selection who are from different faculties than of education are more experienced, hence the result may be more affected by their experience than the faculty at which they studied. Similarly, to Hypothesis 2, I will take a closer look at this in the next calculation.

Criterion for this calculation was more than ten years of practice in the teaching profession. I compared a group of teachers from faculties of education ($n = 63$)

and teachers from different faculties with education programmes (n = 31). Slightly higher self-efficacy was in this case achieved by teachers from different faculties with education programmes (3.93 compared to 3.99), however, this result turned out to be insignificant (p = 0.514).

Limits of Measurement

Selection of the sample was affected by the pandemics precautions, and also by the fact that these results are only from the pilot testing and partial data from an ongoing research. Individual subcategories of respondents are rather small, therefore some analysis results may be distorted. As a result, one cannot possibly get unequivocal conclusions. These limitations in bigger subcategories already came to light during the data analysis when it was impossible to make several analyses, specifically because of too a small sample (subcategory). For future research, it may be useful to conduct a test-reset analysis, which was absent in this measurement, and which would increase credibility of these measurements.

Discussion

Teacher self-efficacy has been paid attention to by experts world-wide for many years now. There is an interest in this topic even in the Czech Republic, where teacher self-efficacy has become a research topic (Smetáčková et al., 2017; Gavora, 2008) and has been written about and published (Gavora et al., 2020). When doing research, its authors were using their own, newly created research tools or they were trying to adapt some from abroad. When it comes to foreign research tools, in our context there were adapted, e.g. TES (Greger, 2011) and OSTES (Gavora, 2011), with neither of them keeping a consistent inner structure or staying the same, original tool.

When making a decision about what tool to use for our research, an important role was played by the fact that NTSES (Skaalvik and Skaalvik, 2007) had been successfully adapted even behind the borders of its origin (Avanzi et al., 2013; Khezerlou, 2013; Djigic et al., 2014), but also by its being a tool and having the ability to capture teacher self-efficacy quite broadly – in six dimensions. NTSES being an interesting tool for measuring teacher self-efficacy can already be found in publication by Smetáčková et al. (2017); since then, nobody has adapted it nor used it for research. Apart from successful NTSES adaptations abroad, there were even some less successful, which did not confirm the original multidimensional structure (Baka, 2017; Brickman and Olsson, 2021), or the tool was not verified with factor analysis nor reliability test (Liddy, 2018). To adapt this tool successfully, it was vital to approach the whole process rigorously and not to rely only on a good-quality translation, but also changes in individual items or adding new items (Kara et al., 2006; Delgado-Lobete et al., 2021). A part of the

process were discussions with teachers from schools, experts from universities, but also psychometric evaluation of the pilot testing. Absence of discussion with the target group was a discussed possible reason for an unsuccessful attempt at an adaptation in Sweden (Brickman & Olsson, 2021). Psychometric characteristics of the tool turned out to be good, while corresponding the original NTSES (Skaalvik & Skaalvik, 2007), but also its successful adaptations abroad (Avanzi et al., 2013). Multidimensional solutions with six dimensions corresponding the original NTSES with high reliability value worked in the pilot testing and also a followed extension of the sample of other teachers, which was confirmed by CFA, being used in other research as well with this purpose (Denzine et al., 2005; Epstein et al., 2013).

Perceived total teacher self-efficacy in this research corresponds approximately equal to what was measured by colleagues in Norway and Italy. Czech teachers achieved 74% of the maximum, Italian 71%, and Norwegian 69% (comp. Avanzi et al., 2013). Findings that Czech teachers achieve slightly higher self-efficacy compared to Italian and Norwegian ones is surprising, given that in the TALIS research they are among those with the lowest self-efficacy in countries in the research. The absolutely lowest results were achieved by Czech and Norwegian teachers in Maintain discipline subscale (comp. Avanzi et al., 2013), which is also in line with results of the TALIS 2018 research (Czech school inspection, 2020), in which Czech teachers achieved values below average in Classroom management subscale, also asking about maintaining discipline in class. Interestingly, after ranking subscales based on their average value SE in them, Czech and Norwegian results are identical, while Italian results differ except for first two subscales (Instructions, Operations) (comp. Avanzi et al., 2013).

Even though the tool used in TALIS 2018 was different, one can see similar questions in subscales: Instructions – Self-efficacy in instructions; Maintain discipline – Self-efficacy in classroom management; Motivate students – Self-efficacy in students' engagement (comp. Skaalvik and Skaalvik, 2007; TALIS 2018). Comparing results from this research and the TALIS 2018 results, one can notice that low self-efficacy appears repeatedly in subscales focusing on motivating students.

Czech school inspection (2020) emphasised that difference between Czech teachers and EU average is the most obvious (and significant), and low values in this area were achieved also by teachers in this research. On the contrary, results in subscale Instructions, in which the teachers in this research are most confident, do not reach the EU average results, nor the TALIS 2018 research ones (Czech school inspection, 2020). According to Bandura, (in Gavora et al., 2020) self-efficacy is created by experience, among other things. In other words, the more years of practice, the more experience, so the more experienced teachers should recognise their own self-efficacy as higher than less experienced ones. This theory is also confirmed by research in which teachers with more years of practice have

higher self-efficacy (Gavora, 2011). Likewise, in this research, results show that more experienced teachers achieve significantly higher self-efficacy than inexperienced ones.

Even though the difference between sexes in the total self-efficacy was not statistically significant, a big difference even with a statistical difference appeared in the Maintain discipline dimension, in which men are more confident than women. This difference may be caused by the fact that, men tend to seem naturally more authoritarian, so they do not worry about maintaining discipline in class. These findings are in contrast to Gavora (2011) in whose research women achieved higher self-efficacy, and it was with a statistical significance. Such different results may be cause by the research sample, but also by a different research tool finding out different dimensions of teacher self-efficacy.

Teachers with pedagogical education in university education programmes achieved significantly higher total self-efficacy than those without pedagogical education. The result itself is not surprising as many authors (Wiliam, 2018; Kola & Sunday, 2015) write about the importance of pedagogical education in preparation of teachers. Certain unclarity may be caused by the fact that, this difference in this research is not significant, hence we cannot completely ignore the possibility that the difference appeared by chance. A significant differ was confirmed in the Instructions dimension, in which teachers with pedagogical education are more confident. If we have a look at results from another analysis of ours, we will find out that after removing experienced teachers from the sample the difference turned around in favour of teachers without pedagogical education, and rather significantly. This situation could happen primarily because inexperienced teachers, who are working on their pedagogical education, tend to be much older than young teachers, education programmes graduates. Inexperienced teachers had opportunities to have more life experience, therefore be better aware of their self-efficacy.

The differences in this sample came to light even among education programmes graduates. Teachers who studied education at a different faculty than Faculty of Education achieved statistically significantly higher self-efficacy than those who studied at Faculty of Education. I compared these two groups in the subcategory of the most experienced teachers, because I had thought that the results can be distorted by the length of practice. That is because bigger percentage of teachers from other faculties than those of education had more than ten years of practice compared to Faculty of Education graduates. In this sample too, however, higher self-efficacy was achieved by teachers from other faculties. Certainly, differences may be caused by quality of preparation in education programmes, which is proved by Jackson & Miller (2019) research, or, on the other hand, emphasize more on knowledge of their study programme and deemphasize on pedagogical practice itself and knowledge.

Conclusion

The main research question was: How is preparation for the teaching profession mirrored in teacher self-efficacy? An answer to that question could be: Preparation for a job may be connected to teacher self-efficacy. What may be different is pedagogical education compared to non-pedagogical, there are differences even among individual study programmes of education at universities. The results also point out that Czech teachers have the least confidence in motivating students and maintaining discipline, which should be mirrored in preparation of teachers or their other education. Even despite limits, the analysis brought interesting results, which deserve to be verified in another research and on a greater sample of teachers. I believe that the presented results mean a contribution to an ongoing discussion in the education policy in the Czech Republic – or it depends on what education teachers have. The NTSES tool used in this research has repeatedly proved as reliable and valid for research of teacher self-efficacy, hence I recommend this tool to be used even in other research of this focus.

Aknowledgment

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Teachers' Professional Self-Efficacy for Collaboration: A Comparison Between European Countries

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ABSTRACT

Since the understanding of non-cognitive skills and their importance have grown, it becomes more and more significant to measure their impact on different areas of professional life. It has been researched that not only individual teacher's professional self-efficacy, but also collective self-efficacy has a significant impact on both the teachers' self-efficacy and students' achievement. The purpose of this study is to select a set of factors that correlate with teachers' professional self-efficacy and to analyse if teachers' professional self-efficacy has an impact on teachers' cooperation with colleagues and students.

Latvian, Lithuanian, Estonian, Danish, Norwegian, Swedish, and Finnish data from the OECD TALIS 2018 teacher questionnaires were used.

To analyse which factors correlate with teachers' professional self-efficacy, the authors of this article selected such variables as the type of school, the type of urbanization, the number of special education students in the class, full time or partial time employment, professional development courses and the professional development at university level. The authors found that there were no significant correlations between the type of school, the type of urbanization, and the number of special education students in the classroom, but there was a significant correlation between professional development courses and the professional development during the university study period. The teachers who worked full time job were more self-efficient than others. To study the impact of self-efficacy on collaboration, the authors of this article selected variables that represented teacher – student collaboration and teacher – teacher collaboration. The professional self-efficacy scale was partitioned into four efficacy levels and each level was analysed with answers from each variable. The group comparison and the linear regression analysis showed that teachers with higher self-efficacy levels cooperated more and better with students and colleagues. Thus, this research adds supplementary evidence to studies showing the importance of professional self-efficacy development.

Keywords: teacher's professional self-efficacy, OECD, TALIS 2018, professional collaboration, teacher – student collaboration, large-scale studies of education

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Introduction

It has been a concern throughout the history of education, how to ensure teachers' effectiveness and continuously promote educators' knowledge development according to changing workforce requirements and classroom environments, as well as how to foster teachers' feelings and beliefs of professional competence. In the last twenty years a large amount of research has been published that emphasizes the role of non-cognitive skills and personality traits to be as important or even in some cases more important than high IQ. OECD highlights that term "non-cognitive skills" in the scientific literature is described as different attributes that characterise personality, including socio-emotional and soft skills, and are not measured with IQ tests (Kautz et al., 2014). Self-efficacy is widely researched as mediator in one or more personality traits and values (De Feyter et al., 2012; Barni et al., 2019; Mammadov, 2021). In return Mcintyre and Vecchione (2016) emphasize the role of self-efficacy as basis of self-confidence and a source of further self-efficacies development.

Bandura (2001) has defined self-efficacy as a belief in one's possibility to perform successfully in the given situation. Teacher's efficacy in terms of effectiveness is defined as a teacher's set of attitudes and/or behaviours that has impact on students' achievement (Klassen & Tze, 2014), but teacher's self-efficacy – as teacher's sense of the extent to which he/she can perform an action successfully (Granziera & Perera, 2019). Skaalvik and Skaalvik (2007) distinguish the difference between teacher's self-efficacy and effectiveness or external control, whereas Sehgal et al. (2017) provide evidence that teacher's self-efficacy influence effectiveness. Traditionally, teacher's effectiveness as well as teacher's self-efficacy have been measured in terms of what students do or as Tschannen-Moran and Hoy (2001) state: how well one can perform one's primary tasks even in difficult situations like engaging difficult students, giving the best explanation in difficult subject area, etc.

Self-efficacy is of importance not only when personality traits are considered. As early as in 1976 an article was published by Armor et al. (1976) that associated teachers' self-efficacy with students' achievement emphasizing its significant role in teaching profession. Similar associations were found in Caprara et al. (2006) study, but Zee and Koomen (2016) argued that most cited studies claiming this relationship might be theoretical in nature. Some authors argue that teachers' sense of self-efficacy is a belief that affects teaching performance and future career path especially for the first-year in-service teachers (Hoy & Spero, 2005), whereas others emphasize that teachers' effectiveness and subsequent behaviour have long-lasting impact on students (Wright et al., 1997). Klassen and Tze (2014) in their meta-analytic review provided evidence for teachers' sense of self-efficacy being more significant in students' achievement than the number of students in the classroom, students' previous achievement or socio-economic

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status (SES). Chesnut and Burley (2015) suggest that teachers with higher self-efficacy levels are more committed to teaching profession. Large body of research is dedicated to teachers' professional self-efficacy and job satisfaction. Ahrari et al. (2021) in meta-analysis study established positive link between these two concepts. Aloe et al. (2014) provided evidence that significant relationship exists between teachers' self-efficacy in classroom management and burnout. Bandura (1997) emphasized that low self-efficacy beliefs can override the best skills, making people to give up when facing difficulties, whereas Vancouver et al. (2001) warn that self-efficacy can negatively influence performance, if it has been formed under inappropriate conditions.

It has been researched that not only individual but collective self-efficacy exists. Bandura (1997) suggested that this efficacy creates a type of social system. Collective efficacy is created in the school environment where two or more teachers work as a team. Skaalvik and Skaalvik (2007) have suggested that teachers' individual self-efficacy should be distinguished from collective efficacy although individual self-efficacy is strongly related with collective efficacy. When applying collective self-efficacy strategies, individual instructional process is managed more effectively (Cansoy et al., 2020). Sehgal et al. (2017) emphasize that collaboration among teachers works as critical factor for teachers' individual self-efficacy, but OECD (2020) stresses the role of interdependent collaboration in building higher levels of teacher's self-efficacy.

Some authors point out that teachers working with highly achieving students (Fackler & Malberg, 2016) and in a well-managed classroom setting (Woolfolk, Rosoff, & Hoy, 1990) show higher levels of self-efficacy. These teachers are less controlling and better at teacher-student interaction (Fackler & Malberg, 2016; Martin et al., 2012). Teachers felt less self-efficacious and less satisfied with their job when facing disruptive students (Zee & Koomen, 2016; Geske & Ozola, 2015).

Butler (2012) found that if a teacher has social motivation (goal) to teach then one will engage more in teacher-student relationships and will use better instructional including mastery-oriented teaching techniques. Usage of these techniques ensures higher reading achievement for 4th grade students (Ozola & Geske, 2019). Chang et al. (2022) discovered that teachers' social goals were positively correlated with self-efficacy for student engagement and classroom management and corresponded to students behavioural and emotional engagement. In addition, Torsney et al. (2019) concluded that social utility value predicted professional engagement and job satisfaction.

As self-efficacy phenomenon was found and researched beginning with mid-19th century, there had been many attempts to create a measurement tool for teachers' self-efficacy, some of them are cited in Lazarides's and Warner's (2020) article. Some authors have argued that self-efficacy according to Bandura's theory is unidimensional, task specific and future oriented (Marsh et al., 2018), some

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emphasized that self-efficacy measurement instruments should measure just task performance, not goal achievement or general personality traits (Pajares, 1996). Tschannen-Moran and Hoy (2001) created and validated a three-dimensional 24 item self-evaluation survey for teachers that measured teacher's professional self-efficacy in: classroom management (8 items, like "How much can you do to control disruptive behaviour in the classroom?"), student engagement (8 items, like "How much you can do to get students to believe they can do well in school-work") and instructions (8 items, like "To what extent can you use a variety of assessment strategies?"), providing comprehensive tool that includes main aspects of teacher's everyday work life.

The aim of this study was to research whether there is a relationship between teacher's professional self-efficacy, motivation, collaboration, and work satisfaction and, if the relationship exists, then is there any difference in trait of collaboration between teachers with high and low self-efficacy. The research questions are formulated hereafter: to what extent a correlation exists between teachers' self-efficacy and chosen factors and, whether there is a difference among collaborative patterns between teachers with high self-efficacy and low self-efficacy.

Methodology

The Organisation for Economic Co-operation and Development (OECD) Teaching and Learning International Survey (TALIS) takes place every five years, and its purpose is to examine teachers' working conditions, teachers' attitudes and work satisfaction with the aim to improve students' learning environment. In the TALIS 2018, 260'000 teachers from 48 countries all over the world participated in the survey.

The Sample

To examine a teacher's professional self-efficacy (TPSE) the authors of this research analysed responses from the TALIS 2018 teachers' questionnaire. In total 20'106 respondents from all countries of comparison were selected in the TALIS two stage random sampling design. In the first stage random sample of 200 schools from every country were selected and in the second stage random sample of 20 teachers from each school were selected.

As countries of comparison all three Baltic countries – Latvia, Lithuania and Estonia, and the Nordic countries – Denmark, Norway, Sweden and Finland were chosen. These two sets of countries represent similar working conditions and share similar history of school development and teachers' education.

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Self-efficacy Measurement Methodology

To measure TPSE in the TALIS 2018 teachers' questionnaire Self-efficacy Composite (T3SELF) scale was used. This scale was created according to Tschannen-Moran and Hoy (2001) three-dimensional measurement instrument and includes: self-efficacy in classroom management (T3SECLS), self-efficacy in instruction (T3SEINS) and self-efficacy in student engagement (T3SEENG). All three subscales were created from the items of teachers' questionnaire question: "In your teaching, to what extent can you do the following?". There were four answer options in the Likert-type scale from "Not at all" (1 point) to "A lot" (4 points).

Items that referenced student behavioural management in the classroom were used to create T3SECLS subscale:
- Control disruptive behaviour in the classroom;
- Make my expectations about student behaviour clear;
- Get students to follow classroom rules;
- Calm a student who is disruptive or noisy.

Items that referenced instructional strategies were used to create T3SEINS subscale:
- Craft good questions for students;
- Use a variety of assessment strategies;
- Provide an alternative explanation, for example, when students are confused;
- Very instructional strategies in my classroom.

Items that referenced strategies for student engagement in the lessons were used to create T3SEENG subscale:
- Get students to believe they can do well in school work;
- Help students value learning;
- Motivate students who show low interest in school work;
- Help students think critically.

The composite value for the T3SELF scale for every teacher was calculated as a mean value from three subscales (T3SECLS, T3SEINS, T3SEENG). T3SELF average value was 12.8, the lowest value was 3.2 and the highest – 16.6. The Cronbach-Alpha reliability coefficients for the T3SELF scale varied from 0.76 for Estonia to 0.87 for Finland.

In order to measure the difference between teachers with different TPSE levels the authors of this research created a new variable T3SELF_LEVELS. All teachers were partitioned into four equal groups depending on the value of scale T3SELF with the help of percentiles, where:
- low TPSE level (lowest 25%) was for teachers whose T3SELF scale's values were below 11.5;
- high TPSE level (highest 25%) was for teachers whose T3SELF scale's values were equal or above 13.8.

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The Teachers' whose TPSE scale's values were between 11.5 and 13.8 (between 25ths and 75ths percentile) were considered as having average TPSE level.

Job Satisfaction Measurement Methodology

In order to measure teachers' job satisfaction, the TALIS 2018 uses composite scale T3JOBSA. For the purposes of this study, the authors did not use this composite scale but analysed the following items of the question: "We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?":
- The advantages of being a teacher clearly outweigh the disadvantages;
- If I could decide again, I would still choose to work as a teacher;
- I wonder whether it would have been better to choose another profession (the values of this variable were reverse coded);
- I enjoy working at this school;
- All in all I am satisfied with my job.

All items were coded in the Likert-type scale from "Strongly disagree" (1 point) to "Strongly agree" (4 points). All these items together are referenced as "Job satisfaction factors" further in the text.

Collaboration Pattern Measurement Methodology

To measure teachers' patterns of collaboration, the TALIS 2018 used the composite scale T3COOP that was built from two subscales. For the purpose of this study, the authors used all items from both subscales in their data analysis. These items were part of a question: "On average, how often do you do the following in this school?":
- Exchange or develop teaching materials with colleagues;
- Discuss the learning development of specific students;
- Work with other teachers in this school to ensure common standards in evaluations for assessing student progress;
- Attend team conferences;
- Teach jointly as a team in the same class;
- Provide feedback to other teachers about their practice;
- Engage in joint activities across different classes and age groups (e.g. projects);
- Participate in collaborative professional learning.

All items were coded in the Likert-type scale with the following values: "Never" (1 point), "Once a year or less" (2 points), "2–4 times a year" (3 points), "5–10 times a year" (4 points), "1–3 times a month" (5 points), "Once a week or more" (6 points). The Cronbach-Alpha reliability coefficients for the T3COOP subscales varied from 0.56 for Sweden to 0.74 for Finland. All these items together are referenced as "Professional collaboration factors" further in the text.

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In order to analyse professional collaboration patterns between teachers with high and low self-efficacy levels, the responses for all item values were recoded as follows:

- "Never" and "Once a year or less" recoded to 1 point;
- "2–4 times a year", "5–10 times a year" recoded to 2 points;
- "1–3 times a month", "Once a week or more" recoded to 3 points and called as "At least once a month" in the data analysis.

Measurement Methodology of the Disciplinary Climate in the Classroom

As it was described in the literature review, the teacher's self-efficacy is closely related with perceived disciplinary climate in the classroom. For this purpose, the authors included a scale "Teachers' perceived disciplinary climate" (T3DISC) in the analysis that was built from the items of the question "How strongly do you agree or disagree with the following statements about this < target class > ?" (< Target class > is defined as the first class that teacher taught in the week before participation in the survey on Tuesday after 11AM. If there were no classes on Tuesday, the teacher had to select a class that she or he taught on the day following that Tuesday):

- When the lesson begins, I have to wait quite a long time for students to quieten down;
- Students in this class take care to create a pleasant learning atmosphere (the values of this variable were reverse coded);
- I lose quite a lot of time because of students interrupting the lesson;
- There is much disruptive noise in this classroom.

All items were coded in the Likert-type scale from "Strongly disagree" (1 point) to "Strongly agree" (4 points). The Cronbach-Alpha reliability coefficients for the T3DISC scale varied from 0.86 for Latvia to 0.92 for Finland.

Measurement Methodology of the Motivation to Teach

As some researchers relate self-efficacy to motivational factors, the authors chose to analyse teachers' motivation to teach. There are three motivational scales in the TALIS 2018, the authors chose to report about teachers' social utility to teach as this factor appeared to be most influential from all three. The scale "Teacher's social utility motivation to teach" (T3SOCUT) was calculated from the items of the question "How important were the following for you to become a teacher?":

- Teaching allowed me to influence the development of children and young people;
- Teaching allowed me to benefit the socially disadvantaged;
- Teaching allowed me to provide a contribution to society.

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All items were coded in the Likert-type scale with the following values: "Not important at all" (1 point), "Of low importance" (2 points), "Of moderate importance" (3 points), "Of high importance" (4 points). The Cronbach-Alpha reliability coefficients for the T3SOCUT scale varied from 0.73 for Denmark to 0.84 for Sweden.

Data Analysis Procedures

All data were analysed in IBM SPSS and IEA IDBAnalyzer using the TALIS 2018 Multiple Level/Population Teacher Weights. The results of data analysis represent population for each country.

Results

To verify whether there are any correlations between selected job satisfaction, collaboration, classroom discipline and motivation to teach factors and TPSE, the authors performed correlation analysis (see Table 1).

As it is displayed in Table 1, the correlation between selected factors and TPSE exists. From factors that were selected to represent teachers' job satisfaction, the 5th factor correlates the most. The 1st and 2nd factor correlate with TPSE the most in Finland, followed by Lithuania and Estonia, the correlation of the 1st factor in Latvia is very small and is not statistically significant. The 3rd factor correlates the most for Latvian teachers followed by Finland and Sweden, this factor correlates negatively and is not statistically significant in Lithuania. The correlation with 4th factor is significant for all countries of comparison, the highest correlation is for Lithuanian teachers followed by Finland and Estonia.

The factors that represent professional collaboration significantly correlates with TPSE for all countries of comparison. The 1st and the 2nd factor correlate the most for the Baltic countries. The 3rd factor correlates the most for Lithuanian and Latvian teachers followed by Denmark's and Finland's teachers. The highest correlation for the 4th factors is for Lithuanian, Latvian and Finnish teachers.

The factor that represents teachers perceived disciplinary climate (D.F.) correlates significantly and negatively with TPSE, where teachers who strongly agree that they have disciplinary issues in the classroom have significantly lower TSPE than those teachers that do not report such issues. This factor has stronger impact in the Nordic countries than in the Baltic countries having the most impact in Denmark and the least impact in Estonia.

The social utility for motivation to teach is significantly correlated with TPSE for all countries of comparison. Correlation is the strongest in Finland followed by Estonia and Sweden.

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Table 1. The Correlation of Teachers' Professional Self-efficacy (TPSE) with Factors that Characterise their Job Satisfaction, Motivation to Teach and Collaboration Patterns

Factor type	Factors (Country)	Denmark	Sweden	Norway	Finland	Estonia	Latvia	Lithuania
Job satisfaction factors	1. The advantages of being a teacher clearly outweigh the disadvantages	0.09	0.16	0.16	0.26	0.19	0.08*	0.20
	2. If I could decide again, I would still choose to work as a teacher	0.09	0.13	0.15	0.25	0.21	0.15	0.21
	3. I wonder whether it would have been better to choose another profession	0.13	0.17	0.14	0.17	0.15	0.22	−0.04*
	4. I enjoy working at this school	0.13	0.10	0.15	0.23	0.19	0.17	0.24
	5. All in all, I am satisfied with my job	0.19	0.27	0.24	0.28	0.21	0.21	0.30
Professional collaboration	1. Professional collaboration in lessons among teachers	0.15	0.20	0.12	0.20	0.21	0.30	0.27
	2. Exchange and co-ordination among teachers	0.23	0.21	0.15	0.20	0.25	0.29	0.27
	3. Participation among stakeholders, teachers	0.14	0.10	0.08	0.13	0.12	0.24	0.26
	4. Teacher-student collaborative relationship	0.20	0.21	0.20	0.26	0.23	0.30	0.32
D.F.	Teachers perceived disciplinary climate	−0.34	−0.27	−0.33	−0.18	−0.11	−0.29	−0.26
M.F.	Social utility motivation to teach	0.16	0.25	0.18	0.27	0.25	0.24	0.21

M.F. – Motivational factor
D.F. – Disciplinary factor
* not significant at $p < 0.05$

The authors of this research created four liner regression models in order to analyse the linearity and calculate the explained variance. In all four models, the teacher's professional self-efficacy was dependent variable; independent variables are the described factors illustrated in Table 1. The results of these linear regression models can be seen in Table 2.

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Table 2. Coefficients of Determination (R^2) of the Linear Regression Equations from Factors in the Table 1

Country	R^2 Model 1	R^2 Model 2	R^2 Model 3	R^2 Model 4	R^2 Model 5
Denmark	0.05	0.10	0.12	0.03	0.20
Sweden	0.07	0.07	0.07	0.06	0.22
Norway	0.05	0.05	0.11	0.03	0.20
Finland	0.10	0.10	0.03	0.07	0.20
Estonia	0.07	0.11	0.01	0.06	0.18
Latvia	0.07	0.17	0.09	0.05	0.25
Lithuania	0.11	0.16	0.07	0.05	0.24

The linear regression equation Model 1 analysed linear relationship TPSE and job satisfaction factors (see Table 1). As it is seen in Table 2, overall, this model explains self-efficacy variation better in the Baltic countries than in the Nordic countries, in this case Lithuania has the highest explained variance – 11% of teachers' self-efficacy distribution.

Model 2 (see Table 2) analysed linear relationship between TPSE and teachers' professional collaboration factors (see Table 1). For Latvia and Lithuania this model explains the variation in TPSE the best, almost twice as for Estonian teachers. The Nordic countries have got medial explanation, on average – 15% from all variations of TPSE values.

Model 3 (see Table 2) analysed linear relationship between TPSE and teacher's perceived disciplinary climate in the classroom (see Table 1). This model works the best in Denmark explaining 12% of TPSE variation, but it explains only 1% of variation in Estonia; as it was already shown in Table 1 Estonian TPSE being the least impacted from the classroom disciplinary issues from all countries of comparison.

Model 4 analysed linear relationship between TPSE and teachers' social motivation to teach (see Table 1). As it can be seen in Table 2 – teachers' self-efficacy variation in Sweden, Finland and Estonia is better explained by social motivation to teach than in other countries, in Denmark and Norway this factor being the least.

Model 5 was created in order to analyse the linear relationship between TPSE and all factors described in Table 1. As it can be seen (in Table 2), this model explains on average 21% of variation of TPSE. The model works the best in Latvia, but in Estonia there are other significant factors that should be included in the model in order to explain variation of TPSE as good as in Latvia.

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Collaborative Patterns

To answer to the second research question, the authors of this article compared teachers with high and low TPSE levels. The first 4 patterns describe teachers' collaboration with students. The authors compared how many percent of teachers in each corresponding TPSE level strongly agrees that they have these teacher – student collaboration patterns. Next eight patterns describe teachers' collaboration with other teachers (see Table 3).

As it is seen in Table 3, there are many patterns of collaboration that differentiate teachers with high TPSE and low TPSE levels in every country of comparison.

More teachers with low TPSE than those with high TPSE strongly agree that when the lesson begins, they have to wait quite a long time for students to quieten down in all countries of comparison, except Estonia. Two to five times more teachers with high TPSE than low TPSE strongly agree that students in their classrooms take care to create a pleasant learning atmosphere. In all countries of comparison more teachers with low TPSE strongly agree that they lose quite a lot of time because of students interrupting the lesson than teachers with high TPSE. The same can be said about disruptive noise – in all countries of comparison, except Estonia, more teachers with low TPSE report disruptive noise than their colleagues who have high TPSE.

As it can be seen in Table 3, similar patterns of collaboration continue within teacher-teacher collaboration between teachers with low TPSE levels and high TPSE. More teachers with high TPSE than low TPSE reported practising all eight collaboration patterns at least once a month. Despite the difference between countries in both country groups being too diverse to unite them unambiguously under an umbrella of patterns in the Baltic countries or in the Nordic countries, several patterns can be distinguished. In the Nordic countries there are more teachers both with high and low TPSE who at least once a month: 1) teach jointly as a team in the same class, 2) provide feedback to other teachers about their practice and 3) exchange or develop teaching materials with colleagues than in the Baltic countries. In both the Nordic countries and the Baltic countries approximately 15% teachers with high TPSE engage in joint activities across different classes and age groups. In the Nordic countries, Estonia and Latvia both teachers with low and high TPSE discuss the learning development of specific students more than teachers with high TPSE in Lithuania. From all patterns more teachers with high TPSE almost two to three times often reported working with other teachers in their school to ensure common standards in evaluations for assessing student progress. There is very small difference between teachers with low and high TPSE in the Nordic countries in the pattern of conference attendance. The number of teachers attending conferences in Latvia are extremely low. As with the 1st and 2nd collaboration factor, the participation in collaborative professional learning is more common in the Nordic countries than in the Baltic countries.

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Table 3. Percentage of Teachers with High or Low TPSE and Their Patterns of Teacher-Student and Teacher-Teacher Collaboration (%)

Factor	TPSE level	Denmark	Sweden	Norway	Finland	Estonia	Latvia	Lithuania
Strongly agree:								
1. when the lesson begins, I have to wait quite a long time for students to quieten down	low	5.6	7.9	4.6	8.3	1.8	5.6	7.0
	high	3.0	3.8	1.5	5.9	3.5	3.1	4.0
2. students in this class take care to create a pleasant learning atmosphere	low	9.8	6.9	4.3	7.6	7.0	6.1	8.1
	high	37.7	27.6	23.1	15.5	19.6	25.0	34.1
3. I lose quite a lot of time because of students interrupting the lesson	low	5.9	8.6	8.1	9.1	3.0	4.0	5.6
	high	3.2	3.3	2.5	4.0	3.1	1.0	2.6
4. there is much disruptive noise in this classroom	low	4.5	8.0	7.8	10.3	2.2	4.1	5.0
	high	2.4	4.1	2.2	5.9	3.0	2.6	3.3
At least once a month:								
1. teach jointly as a team in the same class	low	35.1	38.5	34.7	29.2	14.8	8.4	3.5
	high	40.8	45.7	43.1	38.7	26.6	26.3	7.8
2. provide feedback to other teachers about their practice	low	8.4	12.3	10.9	3.2	3.2	4.2	1.7
	high	17.1	18.0	13.3	9.7	7.2	14.1	7.8
3. engage in joint activities across different classes and age groups (e.g., projects)	low	10.2	9.5	5.0	5.0	4.8	2.9	2.2
	high	18.2	17.3	12.6	13.0	15.0	17.4	11.0
4. exchange or develop teaching materials with colleagues	low	53.0	52.1	60.5	34.4	18.2	20.4	15.4
	high	63.9	65.2	78.6	49.9	36.7	43.3	39.3
5. discuss the learning development of specific students	low	60.7	76.6	85.5	65.0	60.6	52.2	25.1
	high	78.0	88.7	91.0	79.7	80.3	74.7	49.5
6. work with other teachers in this school to ensure common standards in evaluations for assessing student progress	low	30.3	47.9	52.1	29.4	27.3	25.4	11.3
	high	53.0	68.6	70.2	46.4	55.1	57.4	34.0
7. attend team conferences	low	71.8	92.0	90.8	55.0	46.7	3.1	39.5
	high	76.8	94.0	95.1	64.1	66.7	8.4	55.8
8. participate in collaborative professional learning	low	11.9	35.0	36.2	5.0	10.0	5.9	6.3
	high	18.0	48.4	50.3	13.0	27.5	19.4	18.4

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From the selected factors, Finland from the Nordic countries and Lithuania from the Baltic State countries show the least collaborative patterns, but Norwegian teachers with high TPSE show the highest collaborative patterns.

Conclusions

As the data analysis displays, significant correlation and linearity exists between TPSE and selected factors, and there is a difference in collaboration patterns between teachers with high TPSE and low TPSE. As correlations and comparisons do not display causality, the authors of this research cannot deduce whether high TPSE causes the impact on collaboration factors or the collaboration factors cause impact on high TPSE, or both have mutual causation.

In the process of data analysis, the authors of this research discovered that in the TALIS 2018 between all countries of comparison, there was no significant difference in TPSE between gender, place of residence, and school type.

All in all, the mainstream difference between teachers with high TPSE and low TPSE were clearly displayed in Table 3, i.e., on average larger number of teachers with high TPSE were engaged in the selected collaborative activities at least once a month in comparison with the teachers with low TPSE, and there were less teachers with high TPSE that reported disruptive behaviours in the classroom than the number of teachers with low TPSE. Despite there was very high diversity in teachers' behavioural patterns and perceived classroom discipline, on average there were more teachers in the Nordic countries that showed collaborative patterns than the teachers in the Baltic countries.

As this research compared only teachers with high TPSE and low TPSE, i.e., top 25% and bottom 25%, 50% of data is not compared. It should be analysed in further studies, why such a large difference between countries exists. For example, why only 15.5% teachers with high TPSE reported that they strongly agree that students in their class took care to create a pleasant learning atmosphere whereas in Denmark 37.7% teachers with high TPSE reported the same, or why only 13% of teachers in Finland with high TPSE participate in collaborative professional learning at least once a month whereas 36.2% teachers with low TPSE in Latvia did the same.

This research contributes to the body of other studies providing evidence of teacher's self-efficacy in classroom management significance and the role of different patterns of collaboration. This research supplement previous studies that had identified social utility as being one of the most influencing predictors of teacher's self-efficacy.

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Aknowledgment

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Student-Teachers' Pedagogical Reasoning in TEYL Lesson Plans and Microteaching Presentations

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ABSTRACT

Pedagogical reasoning enables student-teachers to better understand their own teaching practices, analyse what, why and how they teach, and become aware of their teaching practices. This case study aims to understand student- teachers' decisions and the pedagogical reasoning behind these decisions in lesson plans in an English language pre-service education programme. Three third-year English language student-teachers enrolled in a pedagogical content knowledge course "Teaching English to Young Learners" (TEYL) participated in this study. We collected qualitative data from lesson plans, reflection notes on these performances and plans, and interviews with student-teachers in the TEYL course. We used Shulman's model of pedagogical reasoning and action as a conceptual model to explore the complexity of learning to teach English to young learners. Data were analysed iteratively through content and thematic analysis. The results indicated that student-teachers made decisions mainly in the transformation and instruction stages, and that their pedagogical reasoning emerged from the theory of TEYL and their assumptions about the characteristics of very young and young learners. More opportunities should be provided to increase their self-consciousness, self-knowledge and sense of agency through reflective tasks, action research projects and teaching practice. The study has implications for student-teachers who need guidance and motivation to prepare reflective lesson plans and for teacher educators who need to raise student-teachers' awareness about decision making and pedagogical reasoning.

Keywords: pedagogical reasoning, lesson planning, student-teachers, English, microteaching, TEYL

Introduction

　　Lesson planning has always been a fundamental competence for student-teachers (STs) around the world. It has been stated as a target competence for STs to gain in methodology courses such as teaching English to young

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learners (TEYL), practicum in Turkey (CoHE, 2018) and in P-12 teacher education programme accreditation in the US (Pang, 2016). In these programmes, quality teaching has been related to teachers' knowledge, skills, and dispositions, and planning a lesson and implementing instruction appear as two vital competences for STs to master (Liyanage & Bartlett, 2010). Lesson planning has also been viewed as a notable characteristic of expert teachers (Farrell, 2013; Tsui, 2009).

At pre-service level, planning lessons and microteaching are offered within methodology courses. STs are assessed based on their preparation and readiness in lesson plans and performances in micro teachings. From this perspective, it is widely accepted that STs can best reflect their teaching skills and competences in lesson plans and micro teachings (Pang, 2016). Through enriched reasoned and reflected teaching experiences in these courses (Nilsson, 2009), STs may be aware of their knowledge needs, and build bridges between theory and practice meaningfully. Similarly, Zeichner (1995) argues that taking STs' attention to certain aspects of their teaching via reflection and reasoning was necessary for increasing their awareness and developing critical eye in the future.

Decision making and pedagogical reasoning are main concepts in teachers' lesson planning and effective teaching (Loughran, 2019; Pang, 2016). Teachers make approximately ten decisions per hour during their instruction (Asghari et al., 2021). The quality of these decisions affect their effective teaching strategies and lesson delivery. There are various factors shaping teachers' decisions: students' background, age, emotions, interests and needs, the nature of the lesson, duration, teaching materials, objectives, and the syllabus (Boadu et al., 2020). As a result of these factors, we make decisions and be aware of contextual limitations and tensions, make adaptations, evaluate effective strategies, and then prefer appropriate techniques. Freeman (1989) considers teaching as a decision making process in which teachers observe, try to understand, reach answers and employ appropriate strategies in their classes.

For Shulman (1987), these decision making steps establish pedagogical reasoning. Pedagogical reasoning has been considered an essential component for STs to develop professionally and intellectually (Nilsson, 2009; Pang, 2016). Decision making and pedagogical reasoning take time, require critical analysis of their teaching moments, involve a process with dynamics; therefore, exploring the reasons behind these decisions helps teacher educators understand what they do and why they do it in instruction giving, and STs become more empowered to search for new ways of qualifying their teaching. Teaching consists of a cyclical process of reasoning and transformation (Shulman, 1987). This cycle starts with comprehension and continues subsequently in order of transformation, instruction, evaluation, reflection, and new comprehension (Shulman, 1987, p. 14). In this model, a teacher starts with comprehension in which they first endeavour to understand the subject matter, the functions and notions of the topic, real

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contexts in which the target structures can be applied, and the aims of their teaching. Next, through critical analysis of materials for communication purposes, the teacher goes into a critical interpretation of the subject matter, pedagogy, and context either by using analogies, metaphors, or examples, or by using realia or authentic tasks to represent the learning content most effectively. In this way, the teacher makes sure that the target content is clear to students regardless of their diverse learning styles. Then, the teacher is engaged in managing the classroom, explaining, interacting with students, discussing and providing effective teaching. This is the instruction stage in which they enact the observable performance with appropriate practical teaching strategies. Following instruction is evaluation which includes monitoring of learning during teaching, formal testing to give feedback to students, and reconsidering materials, the lesson delivery of the teacher, and the lesson, which leads to reflection at the same time. In the reflection stage, the teacher reflects on his actions and recaptures the important moments, emotions, strengths and/or weaknesses of the lesson to derive new understandings regarding their preferences made in the planning and instruction stages. As a result of the reflection, the teacher achieves new insights into their teaching through experience.

The role of pedagogical reasoning and decision making in lesson plans has captured the attention of various scholars in the teacher education field (Asghari et al., 2021; Cheng et al., 2014; Nilsson, 2009). Liyanage and Bartlett (2010) attempted to address the problem of STs' lesson planning by establishing their own model that included their deliberate metacognitive structuring of a lesson both in planning and review phases. Their study confirmed positive shifts in STs' holistic thinking and a student-centeredness in the critical perspectives they took in both planning and review. Similarly, Cheng et al. (2014) focused on STs to understand whether and how they developed their pedagogical understanding and made development during the teacher education programme. The integration of pedagogical understanding with the teaching contexts, integration of feedback from educators and their focus of concern may be the causes for STs' differences in pedagogical understanding. Their study suggests teacher educators enhance STs' sense of agency with an awareness of individual beliefs and theories about learning and teaching. Nilsson (2009) explored the critical incidents which influence STs' pedagogical reasoning in learning to teach with their concerns and needs. As a result, it was found that incidents which were related to classroom management and students' attitudes and learning were the mostly stated factors which affected their pedagogical reasoning. Kavanagh et al. (2020) aimed to understand to what extent and in what ways teacher educators mediated novice teachers' opportunities to engage in pedagogical reasoning. Their results indicated that teacher educators supported novice teachers in representing, decomposing and approximating teaching in practice-based teacher education, which

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valued pedagogical reasoning. Novice teachers were also the focus of Asghari et al.'s (2021) study in which they aimed to identify the novice English teachers' decisions and the pedagogical reasons behind their decisions. They identified six decisions teachers frequently made in implementing instructions and a list of pedagogical reasons such as time management, COVID-19, students' levels, using L1, and so on. Başar (2021) also investigated the main reasons behind English language instructors' decision making skills when departing from pre-planned lesson plans. Affective factors, academic needs, classroom management and timing were found to be the main reasons behind the departure. Also, these teachers' beliefs in deviation from lesson plans were consistent with the decisions they made during their teaching practice. It is advised for teacher educators to prepare STs not only for ideal lesson plans but also the realities of the real teaching atmospheres by giving room for STs' decision making skills against unprecedented incidents.

As the literature shows, although pedagogical reasoning and lesson planning were investigated from different perspectives in different contexts, there has been a scarcity of research for STs' pedagogical reasoning and decision making skills in second language teacher education microteaching sessions. Therefore, this study examines the decisions made by English language STs and the pedagogical reasoning behind these decisions in a methodology course "Teaching English to Young Learners" in a pre-service programme. Accordingly, this study addresses the research questions below:
- What decisions do STs make in TEYL microteaching courses?
- What are the pedagogical reasons behind these decisions?

Methodology

The study utilised a case study method which was exploratory and descriptive in nature in the data collection and analysis procedures (Mackey & Gass, 2015). Case study research design was employed because it allows researchers to capture and describe the complexity of real-life events.

Participants

Three third-year English language student-teachers participated in this study. They were attending the TEYL course at the time of the study. Their ages were 20. One of them was male while the rest were female. The courses they had taken in the programme were advanced writing, listening, speaking, reading, approaches and methods, special teaching methods, literature, linguistics and language acquisition. Ali (the male ST) was interested in teaching very young learners. He was teaching kindergarten students at the time of the study. He is an affectionate, passionate and hardworking student-teacher. İrem (one of

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the female participants) just started to tutor secondary school pupils during the study. It was a new experience for her. Through this study, she became more empowered to seek new ways of conceptualising her own teaching techniques and practices. Leyla (the other participant) was new to the TEYL field. The course was the first place for her to be introduced to the field. She had no teaching experience before. The participants were selected through purposive sampling from the ELT programme of a large state university in Middle Anatolia in Türkiye. They submitted consent forms before the study. The reason for preferring purposive sampling and case study design was to gain a rich and deeper understanding of their decisions and pedagogical reasoning. For ethical reasons, participating STs were given pseudonyms. The study was approved by the university ethics committee.

Data Collection

Data came from three sources: STs' lesson plans, reflection notes on these performances and plans, and interviews with student-teachers in the TEYL course. In this way, we aimed to achieve methodological triangulation in data collection. In terms of the TEYL syllabus, STs were required to prepare two lesson plans: one for preparing a song, an art and craft, and a game for very young learners, and the other one for storytelling, and to perform these plans in microteaching sessions. STs referred to their decisions and pedagogical reasoning in three stages of the lesson plans: pre-stage, while-stage and post-stage of the lesson. In other words, each ST developed at least three decisions and reasons per lesson plan. According to the rules of the course, the topic/theme of the plans were assigned by the teacher educator for each ST separately. These plans and microteaching performances took place twice in an academic term, one for midterm and the other one for final evaluation. In total, we collected six lesson plans and participated in six presentations.

Table 1. Data collection details

Data source	Data collection timing	Aim of the tools
Two lesson plans per ST	one in April and one in June	to help STs plan their teaching presentations, to evaluate STs' techniques and strategies in planning
Reflection notes per ST	one in April and one in June	to enable them to self-evaluate their plans and performances
Interviews with STs	one after midterm presentation, the other one after final presentation	to deepen researchers' understanding of STs' reasoning

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Next, the participants were asked to write their reflections on their plans and performances. In the face-to-face interviews which were conducted after the presentations, they were requested to verbalise their decisions and explain their reasons behind in detail while they were revising their lesson plans step by step. Their responses were audio-recorded and later transcribed for content analysis. Their reflections were also analysed in content and themes.

Data Analysis

Shulman's (1987) pedagogical reasoning model was used as the data analysis framework in this study. Data analysis started with content analysis and thematic categorization (Mackey & Gass, 2015). First, each researcher read each data set repeatedly to identify recurring themes from the comprehension to the evaluation stages of Shulman (1987). In this way, we focused on understanding the decisions and reasons behind them which they preferred in simulated contexts. Then, they came together and compared their analysis for inter-rater reliability (Miles & Huberman, 1994). The agreement rate for each data set was found to be 90% and above.

Results

Results were presented in order of the research questions. Both research questions were addressed in relation to Shulman's cycle. So, as an answer to the first research question, we identified the types of decisions each ST reported in their plans and made in microteaching presentations from comprehension to evaluation stages. To start with the first ST, İrem prepared one lesson plan for teaching English to young learners (ages 6–12) and one for very young learners (ages 3–6). Her assigned topic for the first plan was Farm Animals for young learners and for the second plan was Life Below Water for very young learners.

İrem's decisions came from the target age group learners' characteristics, learning styles and her pedagogical content knowledge. She tried to transform the theoretical knowledge she gained in courses into practice in the plans and presentations. Since it was quite a difficult transformation for her at the first lesson plan, she gained self-confidence and got used to thinking and behaving like a very young learner thanks to the in-class sample teaching activities in TEYL courses. Below (Table 2) we present İrem's decisions and pedagogical reasoning behind them.

İrem reflected on her overall plan and performance after her micro-teaching. On her performance, she stated: "I recognized the fact that I love preparing materials for young learners". She discovered herself and the target group. She developed herself in terms of body language use, using her voice effectively, and full teaching potential to very young learners.

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Table 2. İrem's decisions and reasons

Pedagogical reasoning cycle	STs' decisions	STs' pedagogical reasoning behind these decisions
comprehension	using simple past tense for 6-year-old learners for a series of actions sea animals did below water	to enable them to be familiar with the "World Oceans Day", to learn about actions for saving the ocean, and to make sentences with the target vocabulary items
transformation	choosing elicitation technique, decorating the class like ocean	to raise curiosity of learners, to help them imagine the ocean and familiarise themselves with target words about ocean
instruction	using storybook, guided listening activity, story-reading technique trash collection game	to take their attention, to engage them in the story actively, to raise their awareness about saving the ocean
evaluation	story sequencing activity, controlled writing activity	to check their memory about the story, to improve their visual literacy

She also mentioned: "TEYL lesson plans taught me the fact that each and every method has a meaning and a purpose to be used according to learners' needs and interests."

For example, comprehension, in Shulman's (1987) definition, means that teachers should first understand the subject matter themselves and then understand how ideas are connected. From this aspect, İrem said that she had a good knowledge of subject matter in the topics of lesson plan (the use of simple past tense for narration). As for her own self-confidence to teach it, she had some hesitations due to learners' age, mother tongue and characteristics. Hence, in her midterm lesson plan, she did not prefer kinesthetic activities very much for fear of losing the classroom management and students' concentration. This could have affected her evaluation and performance in the eyes of the teacher educator. However, in her final presentation, she became more aware of the teaching methods and techniques. She related this improvement to the in-class short sample teaching activities in which the educator guided the whole class in the TEYL sessions. She explained: "We planned everything so elaborately that we could show what we aimed for in the plan explicitly and successfully."

Second, Leyla's first plan was for young learners on the topic of "fruits" while her second plan was for very young learners and on the topic of "good health and wellbeing". She recycled healthy and unhealthy food she used in her first plan and connected them to her new topic in the second presentation. Different from İrem, Leyla's decisions emerged from her endeavour to relate her lesson plan to real classroom context because she believed that language learning should resemble daily life situations. In this way, she thought students could make sense of what they were learning in the classroom. She searched for the daily context

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students communicated to each other on health and wellbeing, contacted classroom teachers about this topic used in kindergartens, and learnt what kind of activities they loved doing about it. As a result, she prepared a list of activities and tasks based on her research and preparation. Then, she related these activities to a set of useful language items by checking some language course books. Her aim was to engage students in a variety of real-like communicative activities in which they could use the target language for real purposes. In the post-stage of her plan, she considered students' motor skills and oral language development.

Table 3. Leyla's decisions and reasons

Pedagogical reasoning cycle	STs' decisions	STs' pedagogical reasoning behind these decisions
comprehension	using present simple tense for daily habits	to make the classroom learning real life like to create a real like context
transformation	participate in group work activities, singing a song, odd-one-out activity, preparing a healthy lunch box	to practice the target language orally, to reinforce learners' previous knowledge of colours and food (for recycling the words), to relate classroom tasks with daily life activities
instruction	using a puppet choosing a Hippo as the main character in the story (characterisation) letter recognition	to raise their curiosity, to create interaction, to enhance classroom interaction to develop their motor skills
evaluation	drawing and telling	to understand their comprehension of the topic via motor skills and oral production

Third, Ali's midterm presentation was for very young learners on the topic of "clothes" while his final presentation was on "celebrations" for 8-year-old young learners. Due to his target culture preference in the plan, he decided to choose "Halloween" as the "celebrations" theme. In case students may fear from some Halloween characters, he planned to choose some cute and age-appropriate characters and emphasise that they are all fictional characters. He prioritised concrete words and action verbs instead of abstract concepts. For this reason, he employed a game, art and craft activity, and a song to verbalise the characters and verbs through body language. He believed that students would better internalise the concepts and new words through interaction with each other. Thus, he mainly focused on speaking and listening skills in the design of his activities. Also, to address all learning styles, he incorporated four language skill-based activities in his plan. Unlike his peers, he preferred to check students' comprehension and give feedback in every stage of his lesson plan.

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Table 4. Ali's decisions and reasons

Pedagogical reasoning cycle	STs' decisions	STs' pedagogical reasoning behind these decisions
comprehension	to practice "have/has got…" through Halloween characters for expressing possession.	to show possession through the materials of interesting characters
transformation	art and craft activity look and say approach watching and singing a song	to verbalise characters in practice of "have/has got" to help them visualise Halloween party and to give them an aim for oral participation
instruction	writing a letter	to practice party invitation for a friend
	a Halloween text	to practice reading for the main idea for spoken interaction
	a game	for encouraging extroverted students
	sing along the song and find a partner reading and letter writing activities	for encouraging introverted students
evaluation	using puppets, asking comprehension questions, ordering activities and "find your partner" activity	for checking and feedback as a guest in the classroom, for reading correction,
	using verbal positive reinforcement: "well done, great job, so on."	for encouragement and positive reinforcement

Discussion and Conclusion

This study aimed to examine the decisions STs made and the pedagogical reasons behind these decisions in TEYL lesson plans and microteaching presentations. Explored through lesson plans, observations of microteaching presentations, and reflection notes over an academic semester, the study yielded a range of decisions and reasons behind them across three STs. Rather than comparing these STs to each other as in some other studies (Tsui, 2009), the study in this paper provides a more descriptive and inclusive understanding of the STs' decisions and actions in a TEYL context. They prepared lesson plans individually as the course requirement. While they were preparing their microteaching presentations with materials and activities based on the lesson plans, they endeavoured to imagine a typical very young or young learner classroom, their behaviours, reactions, feelings and needs through British Council Kids videos, National Geographic videos, and other young learner channels on YouTube. Then, they transferred, adapted, and altered their decisions, plans and actions accordingly before the presentations. From this aspect, it may be criticised that STs did not observe a typical

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classroom in the Turkish context in which they are expected to teach after the graduation, and so they did not internalise or understand the problems, situations or affordances they could meet. Hence, we agree with Nilsson (2009) in that STs should be provided with sample critical incidents to help them better foresee and understand the student profile and classroom situations in such methodology classes.

The first research question aimed to understand the decisions STs made in TEYL lesson plans and microteaching presentations while the second question was to identify the pedagogical reasons behind these decisions. Both decisions and their reasoning appeared to be closely related and complementary in STs' answers, so we preferred to present them in relation to each other here. Since they were in a simulated practice context at a pre-service programme and most of them had not been involved in a teaching practice before, they could not imagine what the actual young learner classrooms would be like or require them to react. Hence, their decisions mainly came from the techniques and principles (the theory) they learnt in the TEYL course.

Mostly preferred techniques for the "transformation" stage appear to be art & craft activities, using songs, and using visuals. This stage is defined to be the stage in which teachers adapt their content knowledge (subject matter knowledge) into forms and ways that are pedagogically powerful and responsive to learner varieties for effective teaching. All STs reasoned that students would learn best when they imagined the context which was the ocean in one example and the Halloween party in another. For this reason, they preferred addressing their visual learning style and imagination, which was parallel to students' characteristics as taught in the theoretical part of this course. For fear of losing classroom management and students' attention, however, they did not prefer kinesthetic activities in midterm presentations and lesson plans. They felt incompetent about learners' age (3–6 years old and 6-12 years-old target groups) and characteristics while they were preparing lesson plans for the first time. They believed that they would not be able to manage the class properly in their first microteaching attempt, so this became the deterring factor for them. Another reason for this was the teacher educator's evaluation criteria. In other words, they thought their lessons may not continue as they planned or expected in the lesson plan and this could cause lower grades for the TEYL course at the programme. Unlike the participants in Asghari et al.'s study (2018), the participants in this study did not prefer to use the native language of the students. A possible reason for this is the importance of English mediated instruction as suggested in TEYL theory and the teacher educator's limitations of STs about this issue. To better understand these STs' tendency, consistency and preference to keep teaching in the target language, future studies as also conducted by Güngör et al. (2019) may involve tracing, observing and interviewing novice teachers in terms of pedagogical reasons and

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decisions they made in their own teaching contexts when they become novice teachers. One limitation of this study might be the fact that although they learnt in the theoretical part of the course, they could not identify the learner varieties in its exact sense for making their teaching effective and responsive. They assumed, imagined and contextualised their micro teachings only through videos and classroom descriptions as defined by the educator.

We are also aware that STs' decisions appeared mostly in the "transformation" and "instruction" stages of Shulman's (1987) cycle. To continue with the "instruction" stage, STs preferred using a puppet and a storybook about the target theme because they believed that students at these ages would learn best if their attention was taken and their curiosity aroused through their favourite materials they used in their daily lives (Pang, 2016). This finding is in line with that of Nilsson (2009) in which the participants emphasised the importance of connecting concepts to the pupils' everyday world to make it concrete for them. They also reasoned that if they were engaged in the story which was the learning context for them, they could achieve interaction, keep their attention, and encourage all students to speak authentically. Particularly, STs developed more self-confidence after the midterm presentations as the theoretical knowledge was transferred into practical knowledge more through sample art and craft, song, game, storytelling, simple listening, speaking, and limited reading and writing activities in the TEYL courses. Such a wide range of application of techniques in the class encouraged STs and deterred them from feeling ashamed of being ridiculous in front of their classmates. Clearly, as also acknowledged by Nilsson (2009), the teacher educators must understand the STs' emotions and reasons which could limit or enhance their decisions in preparing lesson plans and microteaching presentations. Accordingly, they may shape their methodology course content by taking these concerns, limitations or enhancements into consideration at pre-service programmes.

Another stage in which STs expressed their decisions and reasons was the "evaluation" although not varied as in two previous stages. STs decided to check students' comprehension by keeping their motor skills active (asking them to draw and tell), checking their memory (story sequencing activity), and giving feedback to them (verbal positive reinforcement through "well done, great, so on). They preferred to evaluate the students' learning or comprehension at the end of the lesson which was also the post-stage of the lesson plan (Pang, 2016). The simulated context made it difficult for STs to understand if and to what extent students in the real context would understand and learn or not in this stage. This, inevitably, shows us another limitation of the study resulting from simulated contexts. For this reason, they only referred to their peers' comments, feedback and questions to understand how much a real very young or young learner would understand or learn in the classroom.

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An important finding in this study is that STs felt confident about the subject matter knowledge due to the order and content of target topics to be taught to very young and young learners. The appropriate topics for this age group were seen as simple and mastery to any language user. For this reason, STs did not experience any anxiety or lack of self-confidence in the transformation, instruction or evaluation stages related to the target content. In that sense, the findings of this study should not be generalised over other methodology courses which were, for example, aimed for adult learners, but be compared and contrasted with other studies conducted in the TEYL context at pre-service programmes. However, their stress emerged from the age, characteristics and learning styles of this age group of students and the need to simplify the content to the characteristics of these students. As an overcoming strategy, they found it useful to observe and take notes of the comments and feedback provided by the educator on plans and performances of their peers throughout the term as also found out in Cheng et al.'s (2014) study.

In general, STs found the lesson planning and pedagogical reasoning practices in the TEYL course cognitively demanding but at the same time useful and awareness-raising. They could figure out the actual reasons and actions behind their decisions thanks to the pedagogical reasoning oriented lesson plans instead of trying to obey the course evaluation criteria or the educator's syllabus only. Through the pedagogical reasoning oriented lesson plans and interviews on presentations enabled them to reflective reasoning, STs could confirm or change their emerging beliefs about TEYL and gained multiple perspectives of their peers and the educator on the teaching and learning that took place in the presentations. Nevertheless, in order to better understand what STs think, know, believe and do, there is a need for more in-depth awareness raising studies which explore their pedagogical reasoning through longitudinal studies in language teacher cognition research as also suggested by Borg (2003) and Freeman (2002).

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Exploratory Study on Latvian Secondary School Teachers' Understanding of the Concept of Scientific Literacy

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ABSTRACT

Teachers' scientific knowledge and understanding of science are prominent in determining how teaching scientific literacy will be integrated in the curriculum. However, in previous literature in-service teachers' understanding of scientific literacy has not been studied sufficiently. This qualitative study aims to close this gap and explore how Latvian secondary school teachers (N = 23) understand the concept of scientific literacy. In our study, we distinguished three dimensions of scientific literacy: procedural, affective, and conceptual. Our results indicate that teachers associate scientific literacy mainly with the aspects related to procedural dimension: having knowledge about conducting a scientific study, applying scientific methods, and having an understanding about scientific concepts and processes. Teachers do not perceive themselves as highly scientifically literate for a variety of reasons. For the teachers interviewed, features of scientific literacy overlap with media and information literacy and critical thinking. We conclude that the teachers' understanding only partly covers the depth and breadth of the concept of scientific literacy, and differs depending on teachers' previous education and school subject thought. The importance of teachers' (further) education in developing their understanding of the concept of scientific literacy is discussed.

Keywords: scientific literacy, media literacy, critical thinking, scientifically literate person, secondary school teachers

Introduction

Schools undoubtedly are among the main developers of appreciation of science in society and the main providers of science literacy during one's school years (Solomon, Scott & Duveen, 1996). However, since the emergence of the scientific literacy concept in late 1950s, the teaching of science at schools and the

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varied notions of scientific literacy have been an object of heated discussions for researchers and policy makers. Educational goals or constructs, as said by Wilson (1986, p. 27), often "take on a life of their own … before we know, literally, what we are talking about." Wilson (1986) has proposed that, before we uncritically accept (or reject) any educational goal, first we should attempt to answer the question of meaning, i.e., what is meant by the construct or educational goal? While on a macro level, the meaning of scientific literacy can change depending on the context such as the constraints of the curriculum or institution (Miller, 1998; Laugksch, 2000), on a micro level, it solely depends on teachers' scientific knowledge, their own understanding of science, as well as their ability to assess students' conception of science (Schwartz & Lederman, 2002). Surprisingly, in this long-standing discussion, the voices of educators and in-service teachers and analysis of their interpretations of what it means to be scientifically literate and how such an educational goal can be achieved are understudied (e.g., Choi et al., 2011). Hence, in the present study, our aim is to examine teachers' own interpretations of the concept of scientific literacy. The premise of this study is that by understanding teachers' conceptualizations, it is possible to propose a vision on teacher education and further education and to design new curriculum and professional development frameworks.

In the present study, we also problematize the immoderate focus on science as belonging to natural ("hard") subjects that does not equally include social sciences and humanities (Charlton, 2006). This creates a risk of these disciplines being marginalized in the debate about school science. Moreover, the long-standing split between sub-cultures of humanistic/social and "hard" sciences (Snow, 1990) has never truly been removed from the discussions about scientific literacy in schools. Besides that, we add this specific layer of analysis to our study because **in the Latvian context**, it is intriguing to discuss teachers' interpretations of scientific literacy from the school subject perspective due to the current changes in the educational paradigm. Since the late 1990s, in Latvian school system the pressure on educators has been mainly to increase the number of students who pursue education and careers in STEM (science, technology, engineering, and mathematics) fields (Kiselova & Gravite, 2017; Karaseva, 2017), thus marking a clear line between the STEM subjects and the rest of the disciplines taught. However, the current school reform, labeled as "School 2030", is grounded in competence-oriented and interdisciplinary teaching framework that prepares students to creatively master the various economic, political, social and cultural challenges in a rapidly changing world (Birzina, Pigozne & Cedere, 2021). Such an approach calls for curricula implementation that is based on the principles of inter- or trans-disciplinarity and the development of students' inquiry skills that breaks the long-standing boundaries between school subjects (Goodson & Mangan, 1995).

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Conceptualizations of scientific literacy

There is no single agreed definition of the term "scientific literacy." Rather, a number of conceptualizations exist that stress the varying elements of content knowledge, attitudes, and skills (for extensive reviews see DeBoer, 2000; Laugksch, 2000; Roberts, 2007), leading actually to a conclusion that the concept has become "ill-defined and diffuse" (Laugksch, 2000, as cited in Dillon, 2009, p. 201). Reportedly first used in 1952, the term "scientific literacy," states, in a very condensed manner, that being scientifically literate means "being educated and possessing knowledge in and about science" (Norris & Phillips, 2016, p. 947). Norris and Phillips (2003) note that the term is often used to refer to the following aspects: understanding the nature of science and its relationships with socio-cultural issues, understanding of science and its applicability, appreciation of and comfort with science, including its wonder and curiosity, distinguishing what is and what is not science, ability to use scientific knowledge in everyday life, appreciation of science, its benefits, and understanding the risks of science, ability to think critically about science, and deal with scientific expertise. In an attempt to consolidate the rather scattered aspects of scientific literacy, Miller (1983) proposed a three-dimensional conceptualization consisting of

a) an understanding of the norms and methods of science;
b) an understanding of key scientific terms and concepts; and
c) an awareness and understanding of the impact of science and technology on society.

Similarly, Kemp (2004) has suggested a three-dimensional model of scientific literacy that entails the following:

a) procedural dimension (learning about science, using science in everyday life, applying science for social purposes, being able to decode and encode scientific communication, think scientifically, engage in inquiry, and use the tools of science);
b) affective dimension (having appreciation for science, interest in science, inclination to stay up to date with science development and science related social problems, having objective and open mind, and having self-confidence to use science); and
c) the conceptual dimension (knowledge of science history, science concepts, science vocabulary, principles of science, and limitations of science, as well as the understanding of the interrelations between science, society, and technology, and the understanding of science as a social activity).

Based on an extensive literature review, Chadwick (2018) proposed that scientific literacy can be defined as consisting of various individual and societal aspects. She argued that various combinations of competencies and skills of science, knowledge of the content of science, knowledge of nature of science, and knowledge of scientific processes (all being individual aspects of scientific literacy)

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impact our interactions with society. For example, knowledge of the nature of science and understanding about the scientific process supports the development of sympathetic and critical attitude towards science (a societal aspect of scientific literacy); while knowledge of scientific content together with competencies and skills of science enables us to actively participate in scientific society (Chadwick, 2018). A scientifically literate individual also can have a sympathetic and critical view of science that benefits them in their daily lives (AAAS, 1989; DeBoer, 2000). For example, they can carry out basic critical evaluation and participate in a discussion about reports of science in the media (DeBoer, 2000).

Advancing the idea of scientific literacy as a multi-dimensional concept, Choi et al. (2011) have outlined a scientific literacy definition for the 21st century. It consists of five dimensions:

a) scientific contents;
b) mental habits—communication, systematic thinking, information management, and the use of evidence;
c) character and values to act responsibly;
d) science epistemology and the relations of science with society;
e) metacognition and self-direction.

For them, scientifically literate individuals are global citizens who "are active agents who take responsibility to resolve global issues with moral and social compassion and ecological worldview" (Choi et al., 2011, p. 682).

In academic literature, quite prominent also are the conceptualizations of scientific literacy as a continuum. Among the most well-known such frameworks are those developed by Shamos (1995) and Bybee (1997). As proposed by Shamos, a continuum consists of the degrees of "sophistication as well as the chronological development of the science-oriented mind" (Shamos, 1995, p. 87). For him, the first degree, "cultural scientific literacy," is the simplest, and in Shamos' view, it represents the level of scientific literacy possessed by most educated adults who know science-related terms and their definitions, and thus are able to "recognize many of the science-based terms (the jargon) used by the media, which is generally their only exposure to science" (Shamos, 1995, p. 88). The second form, "functional scientific literacy," entails some level of command of a scientific vocabulary—a "science lexicon" (p. 88)—but it also means that the individual is able to discuss, read, and write using science terms in a nontechnical but meaningful context. A functionally scientifically literate individual would thus not only be able to read and comprehend a science-based newspaper article, but would also be able to communicate the content of the article to somebody else. The third form and level of scientific literacy, "true scientific literacy," according to Shamos (ibid.), is the most difficult to attain, because in addition to the previous forms, also involves, knowledge about the scientific enterprise, science epistemology, and analytical and deductive reasoning skills.

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Conceptualizations of scientific literacy as a continuum has led to questioning of whether deep sophisticated knowledge about science is necessary for/is attainable to everyone (for "pro" arguments of such a proposition see Shamos (1995); for a critique of it, see, e.g., Fensham, 2002). As a response, two main views on teaching science at schools (called Vision I and Vision II) have emerged, namely the "focus-on-sciences-and-scientists" (Vision I) and the "focus-on-situations" approaches (Vision II) (Roberts, 2007). Vision I is linked to Shamos' (1995) proposed dimension of "true scientific literacy" that is claimed by him not to be necessary for or attainable by everyone. In the school context, Aikenhead (2006) has described it as learning or teaching science with an aim to prepare future scientists. It emphasizes science as a discipline that demands procedural and propositional knowledge (Liu, 2013), and its subsequent application in a lab-based environment (Bybee, 1997; 2016).

Vision II (and its extension into Vision III—see, e.g., Roth & Barton, 2004, Santos, 2009) on the contrary, draws on a socio-cultural perspective of teaching and learning science, and, as noted by Aikenhead (2006), recognizes that science is not isolated content, but involves rich cultural connotations (values, attitudes, power relations), where both the products and processes of science are embedded in social situations that we face as citizens. Valladares (2021) describes science teaching at schools as a slowly progressing journey from teaching that is focused on the memorization of scientific concepts and laws (Vision I), toward a scientific teaching focused on the study of science risks and impacts on society and, more recently, on the role of science as a tool for social change (Vision II). Hence, often the ways of promoting scientific literacy at schools have been criticized for placing too much focus on a mere body of concepts or indisputable facts (Leden, Hansson & Redfors, 2017), shaped by the image of laboratory science (Roth & Lee, 2002). It is said that while striving to achieve the educational goals related to scientific literacy, schools are missing the sociocultural context of science and insufficiently covering the epistemology of science (Lederman, 2007; Lederman, Lederman & Antik, 2013). It is also said that the competing Visions I and II manifest themselves in current evaluative designs and strategies for teaching and learning. For example, while PISA evaluations are characterized by contextualizing the survey items making it clearly linked to Vision II, at the same time, TIMSS assessments, through its textbook questions without context, reflect the spirit of Vision I (Bybee, 2016; Liu, 2013).

Vision II also tries to tackle the long-standing problem of "two cultures" coined by C. P. Snow in his famous Rede Lecture at Cambridge University in 1959 (Snow, 1990), in which he highlights the sharp division between humanities, social sciences, and natural sciences caused by the narrowing of the notion of "science" to only include natural sciences and using the term "scientist" to only refer to a person who works in or studies an area of natural science.

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The **Table 1** provides an overview of the various conceptualizations on scientific literacy summarized above. In this summary, we indicate that most of the previous proposals distinguish mainly among three dimensions of scientific literacy: knowledge (cognitive dimension), skills (procedural dimension), and attitudes (affective dimension).

Table 1. Overview of the various conceptualizations of scientific literacy in previous literature

Author	Knowledge	Skills	Attitudes
Miller, 1983	an understanding of the norms and methods of science (i.e., the nature of science); an understanding of key scientific terms and concepts (i.e., science content knowledge);		an awareness and understanding of the impact of science and technology on society
National Academy, 1996	content of science; context of science	science process	scientific attitude
Gräber et al., 2001	Subject competence; Epistemological competence	Learning competence; Social competence; Procedural competence; Communicative competence	Ethical competence
Norris & Phillips, 2003	Understanding the nature of science and its relationships with socio-cultural issues; understanding of science and its applicability ability to think critically about science and deal with scientific expertise	Ability to use scientific knowledge in everyday life	Appreciation of and comfort with science, including its wonder and curiosity, distinguishing what is and what is not science; appreciation of science, its benefits, and understanding the risks of science
Kemp, 2004	*Conceptual* (e.g. science concepts; science vocabulary; broad principles of science etc.)	*Procedural* (e.g. use science everyday life; apply science for social purposes; think scientifically; reason and argues; judge the validity of claims; solve problems; integrate knowledge; engage inquiry; use some of the tools of science etc.)	appreciation for science; interest in science; objective, open mind and skepticism; ethical values; self-confidence to use science

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Table 1. Continued

Author	Knowledge	Skills	Attitudes
Chadwick, 2018	Knowledge of nature of science; knowledge of scientific content; knowledge of scientific processes	Competences and skills of science	
PISA, 2018	Scientific understanding: an individual's understanding of scientific concepts, phenomena and processes	Science inquiry skills: their ability to apply this knowledge to new and, at times, non-scientific situations	

Parallels with media and information literacy and critical thinking

The various conceptualizations of scientific literacy entail understanding of science communication or abilities to evaluate trusted sources of scientific information, hence tapping the domains that are typically attributed to media literacy (Rosenthal, 2020). The same can be said about critical thinking. Such a trend has intensified itself due to the growing amounts of science related disinformation, especially during the current COVID-19 pandemic, and the need to grasp the complex role that the digital media play in informing audiences about science-related issues and the cognitive challenges that we experience as media audiences (Singh & Banga, 2022). For the purposes of this study, we conceptualize scientific literacy, media literacy, information literacy, and critical thinking as related but still distinct concepts, and propose that it is fruitful to explore the relationships between them.

The popular descriptions of media literacy refer to the abilities to access, analyze, evaluate and create messages in a wide variety of media modes and formats, and recognize the role and influence of media in society (Aufderheide & Firestone, 1993; Livingstone, 2004). It is generally believed that there are links between scientific literacy, how individuals generally use media, and people's media consumption habits. For example, proficiency in media consumption positively correlates with scientific literacy (e.g., see Takahashi & Tandoc, 2016). Information literacy is often defined as the ability to search for, select, critically evaluate, and use information for solving problems in various contexts (Bawden, 2001).

As for critical thinking, it refers to disciplined and structured intellectual process in which an individual engages when he or she conceptualizes, applies,

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analyzes, and/or assesses information obtained from different sources. An individual exercises his or her critical thinking by considering the various alternatives when judging (Ennis, 1987; Hatcher & Spencer, 2000). Previous studies indicate that skills to critically evaluate the accuracy of scientific information online are related to practices of information consumption and sharing (Vosoughi, Roy & Aral, 2018; for a review see Madathil et al., 2015).

The aim of the present study and research questions

To date, few studies have focused on in-service teachers' understanding of the concept of scientific literacy (Choi et al., 2011). Moreover, there is a dearth of studies on the views on scientific literacy of different subject teachers. Hence, in the present study, we explore how Latvian secondary school teachers understand the concept of scientific literacy.

In our study, we aim to capture the views of teachers of STEM, humanities, and social sciences. We examine teachers' understanding from three different angles. First, the "meaning" of scientific literacy is clarified by asking our study participants "How do you describe scientific literacy?", second, we identify what are the participants' views on the "elements" of the concept of scientific literacy by asking "What characterizes a scientifically literate (or illiterate) person?", and third, we apply the lens of reflectivity (Roth & Barton, 2004) by asking how scientifically literate the study participants feel and why.

Method

Participants. Participants were recruited by using purposive sampling. Participation in this study was voluntary. Twenty-three individual interviews were conducted among 25–67 year old secondary school teachers (seven men, 16 women; length of service at the school from one to forty-four years). Teachers represented the following subjects: nine STEM teachers (Mathematics, Biology, Chemistry, Physics, Geography, ICT), seven social sciences teachers (Economics, Psychology, Political science), five humanities teachers (Latvian language, English as foreign language), one sports and one design teacher. When quoted, study participants were identified by code number, area of teaching subject (STEM, SS – social sciences, HS – humanities, other) and age (for example, A1, HS, 28).

Data collection. Semi-structured interviews (40–60 min) were used as a data collection method. Interview questions were formulated in such a way that it would be possible to find out teachers' understanding of science literacy, as well as to examine the following topics: science literacy, scientific literacy, characteristics of a scientifically literate person. Participants were informed about the confidentiality of the information collected.

Data analysis. Inductive thematic analysis was used. First, repeated examinations of each interview took place. Then, the search and definition of topics and

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sub-topics was performed. As a result of the thematic analysis, we defined, for example, the following themes: scientific literacy (knowledge, skills, attitudes), scientifically (ill)literate person (see Table 2 for topics, sub-topics and examples).

Table 2. Topics, sub-topics, and examples

Topic	Sub-topic	Example
Scientific literacy	Knowledge	"I understand that it is knowledge, understanding of different scientific concepts, processes that are necessary for everyday life." (A2, STEM, 39)
	Skills	"I think that scientific literacy could be related to the methods of scientific research, its design." (A1, HS, 28)
	Attitudes	"Scientific literacy is when we trust scientific discoveries." (A11, other, 44)
Information literacy		"Literacy is the way they (students) know how to find information." (A18, HS, SS, 37)
Critical thinking		"I think it is the ability to deal with facts, to argue your point. Critical thinking – either I accept the facts as true or false." (A13, SS, 46)
Scientifically literate person	Others	"A scientifically literate person goes about his daily life in a way that is accepted or scientifically proven throughout the world." (A10, STEM, 67)
	Self	I feel more scientifically literate than the average member of the public because I have written scientific papers, and I know what to do if you have to gather a lot of information. (A16, SS, 37)

Results

1. The teachers' views on the concept of scientific literacy

Following the structural distinction that we established in reviewing the theoretical conceptualizations of scientific literacy, we coded the results on teachers' views on the concept of scientific literacy by looking at three dimensions: conceptual dimension (knowledge), procedural dimension (skills), and affective dimension (attitudes).

On the conceptual dimension, most of the teachers who participated in our study mainly emphasized that scientific literacy means understanding the general concepts of science, understanding what a scientific theory is, and knowing different scientific terms (science vocabulary). Several teachers also noted that scientific literacy is achieved by developing abilities to think in the ways scientists think. Notion of scientific literacy was explained by comparing them to media and information literacy and critical thinking, for example, in the words of one of our study participants:

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> *The way I understand it [scientific literacy], well, let's say, I read some text about what is happening in the world, I immediately think: "The way it was presented, is it the opinion of one person? Or is it based on some research?" I think of the human ability to think critically, understanding of which sources is scientific literature, but which is a gossip page.* (A3, STEM, 48)

Our study participants also mentioned that scientific literacy means making decisions, based on scientific information. However, one teacher insisted that a "general scientific" literacy does not exist, for her scientific literacy meant deep knowledge in a specific discipline (A9, HS, 49).

On the procedural dimension, several teachers noted that science is a process, hence also scientific literacy can be associated with its procedural properties: application of various research methods, being able to measure, make conclusions, and compare your findings with the previous literature. During the interviews, the skills for collecting data were emphasized. One of our study participants said that "scientific literacy is related to scientific research methods, their creation, study designs" (A1, HS, 28). When asked to explain more in detail which research methods teachers have in mind, most of them referred to scientific observations that are typical in natural sciences. As one teacher explained, scientific literacy manifests through

> *some issue that people are deeply interested in. In biology and such fields people can experiment in a laboratory, they experiment with it [the issue] in a lab environment. (…) Then it is proved, described. This cannot be done without research.* (A12, SS, 53).

On the affective dimension, we coded only two items and found two types of trust in our data: trust in scientists and trust in scientific discoveries. Both types of trust were associated with features that overlap with some elements of media and information literacy, such as being able to critically evaluate information sources. As one of the teachers interviewed said:

> *I haven't heard such a term [scientific literacy], but I think what it might mean is trusting scientists who have dedicated their time to researching a problem, not trusting your neighbor posting on Facebook some rubbish.* (A16, SS, 37)

An interview participant who was speaking about the affective dimension of scientific literacy emphasized the role of science communication that, in his opinion, could be improved in order to increase the public's trust in scientific discoveries and raise the overall level of scientific literacy in the society. He said that

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> *scientific literacy is when we trust scientific discoveries when we read about them in the media. Scientific literacy is that we know how to check resources, facts, it is similar to media literacy. (…) As nowadays everything we know comes mainly from the media, including scientific discoveries, therefore in general, scientists should communicate more with society, then scientific literacy will also be greater.* (A11, other, 44)

2. The teachers' views on what characterizes a scientifically literate person.

When coding our data related to the second research question "What characterizes a scientifically literate (or illiterate) person?", we initially applied the same three-dimensional coding scheme focusing on the conceptual, procedural, and affective dimensions of scientific literacy, however, after reviewing all codes, we created a fourth—occupational—dimension.

On the cognitive dimension, the views on what characterizes a scientifically literate/illiterate person overlapped with the descriptions that teachers used when explaining their understanding of the concept of scientific literacy. For our study participants, a scientifically literate person was knowledgeable about scientific theories, about scientific processes, and is able to discuss issues related to science. Most of the teachers insisted that a truly scientifically literate person has deep expert knowledge in only one or, in rare occasions, in several fields. One the teachers explained:

> *A scientifically literate person is one who understands and has delved into one field of science, who can explain like an expert. From my point of view, if I know, if I have studied history, then I can explain something about it, but if don't have clarity, then I can't explain anything.* (A7, HS, 51)

For this interviewee, "clarity" meant knowledge of the general paradigms dominant in the specific discipline. Formal studies finalized with a degree in one specific discipline was the key to ensure that the dominant paradigms are learned. She said: "If I hadn't studied [the field], I could misunderstand things or understand them not in the right way."

On the cognitive dimension, we also found that data codes overlap with the notions of media literacy and critical thinking: several of the study participants equated scientific literacy with information and media literacy. In the words of one of our study participants: "Most likely, a scientifically literate person will be a smart person, an informed person, a person who consumes information carefully, and who has skills of logical thinking and critical thinking." (A9, HS, 49). On cognitive dimension our participants also emphasized the need to develop a habit of constantly improving one's knowledge about science-related matters.

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When describing a scientifically illiterate person, teachers most often said that such a person does not know scientific terminology (in the words of one teacher, "does not speak the language of science"), and has limited understanding about science. Parallels were drawn with information illiteracy and potential consequences associated with the lack of this skill, for example, by saying that such a erson is an easy target for manipulation.

On the procedural dimension, the abilities to use technologies, different equipment for engaging in scientific activity, knowing and applying the principles of academic ethics, and, more generally, demonstrating evidence-based behavior in everyday life were mentioned as the characteristics of a scientifically literate person. In this dimension, we noticed overlaps with information literacy, when the study participants compared scientific literacy with doing research by using various information sources before making decisions.

Scientific illiteracy on the procedural dimension, according to our study participants, manifests itself through arguing against science, refusing to act according to scientists' advice, engaging in discussions on science topics without understanding them, and again, overlapping with information literacy, not evaluating information, and not doing proper information analysis before shaping one's opinion.

On the affective dimension of a scientifically literate person, participants noted that such a person trusts science, appreciates science and its discoveries, is enthusiastic and supportive toward science, is motivated to study, learn about science, and is self-motivated to increase one's level of knowledge about science. On the contrary, a scientifically illiterate person was characterized as distrusting scientists, believing in pseudoscience, and, as several of our study participants emphasized, not having interest in the world, and being indifferent to the important issues and challenges that we face as societies. It was discussed in the context of the School 2030 reform, and posed as a challenge that teachers face. One teacher explained:

> If a student has the will and desire to understand science, then they also are scientifically literate. You can immediately feel that a student wants to do something, discover something, and check how things work. (A20, STEM, 54)

We established a fourth layer of analysis, the **occupational dimension**, to highlight the participants' views where the professional engagement in science as the core criterion for being a scientifically literate person was expressed. Several of our interviewees pictured such a person, in the words of one of the participants: "He/she is a scientist – creative, passionate, open minded and with a broad horizon." (A19, STEM, 46). The views on an illiterate person justified the creation of this fourth—occupational—dimension, because several teachers

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noted that a scientifically illiterate person is the one who is not professionally involved in science.

3. The teachers' views on their own levels of scientific literacy

When asked about their own self-perceived levels of scientific literacy, teachers were quite modest and in most cases—critical towards themselves. When asked to assess their scientific literacy on the scale from 1 to 10 (where 1 is "very low" and10 is "very high"), only three teachers said that they are able to assess their scientific literacy in numerical terms. The answers that they gave were "between 4 and 5", "7" and "between 7 and 8", indicating that they do not evaluate their scientific literacy as being high. Instead of assessing their scientific literacy with a number, several teachers provided reasoning about what makes them feel scientifically literate. One quite often used explanation was that they feel to some extent scientifically literate because of their **knowledge** in specific fields – the school subject that they are teaching or a discipline that they personally are interested in (e.g., medicine, biology) due to some health issues or some other reasons. Several teachers responded that they feel to some extent scientifically literate because they have **interest** in the subject that they teach at school and an urge to update knowledge and follow the developments in this one specific science field. For others, the indicator that they are scientifically literate was **skills** in carrying out scientific studies, supervising student research.

Explanations for self-perceived scientific illiteracy. Several reasons can be identified why the teachers assessed their own scientific literacy as being rather moderate and actually quite low. In a number of interviews, links between scientific literacy and information literacy can be identified: these were manifested through, first, self-perceived inability to find, read and understand scientific articles, and second, self-perceived insufficient information processing habits:- the lack of skills to evaluate the credibility of information source and find trusted sources. One teacher explained: "I am moderately scientifically literate, my problem is that I tend to trust people and information uncritically" (A1, HS, 28).

In one instance, the self-perceived low levels of scientific literacy were related to the lack of computer handling skills ("I 'cannot do' ICT"), and in one instance were related to lack of foreign language skills that was the main obstacle why the teacher cannot read scientific studies in their original language of publishing.

We coded two items under the **occupational dimension**: one teacher said that she cannot assess her scientific literacy because "only scientists are scientifically literate, and I am not a scientist." Another teacher explained that "scientific literacy is not for everybody," indicating later during the interview that the presence of scientific literacy is related to one's occupation as a scientist (A23, STEM, 44).

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Discussion and Conclusions

In this study, we aimed to explore how Latvian secondary school teachers understand the concept of scientific literacy. We examined teachers' understanding from three different angles. First, the "meaning" of scientific literacy was clarified by asking our study participants "How do you describe scientific literacy?," second, we identified what are the participants' views on the "elements" of the concept of scientific literacy by asking "What characterizes a scientifically literate (or illiterate) person?," and third, we applied the lens of reflectivity (Roth & Barton, 2004) by asking how scientifically literate the study participants feel and why. In this section we will discuss, first, the main findings from the study, and second, provide recommendations for the educators of teachers and teachers' (further) education to develop teachers' understanding of the concept of scientific literacy.

The thematic analysis of the interviews allowed us to assess the link between the expectations placed on teachers and their perceptions of scientific literacy, i.e., teachers are not expected to educate students based on the latest scientific findings. One of the main themes that emerged from the analysis of the results is that most teachers don't see their work as related to science and consequently teachers do not think that they have a role in introducing students to scientific discoveries and establishing links between the school science and students' daily life. Most of our study participants said that they follow the prescribed curriculum and use ready-made teaching materials and textbooks that do not tell how to use science to explain everyday phenomena. It indicates the dominance of Vision I (Roberts, 2007) approach where the school science means "lab science", while the current educational reform in Latvia "School 2030" requires the opposite by postulating that every student should be scientifically literate, understand the process and challenges of science in order to be able to build one's own opinions based on facts (Skola 2030, n.d.). We conclude by arguing that there seems to be a gap between the core ideas of the new curriculum and the fact that teachers who are now implementing it have difficulty in seeing the links between their subjects taught and science, and understanding that science is an interdisciplinary effort, and is heavily theory-laden (Choi et al., 2011). Paradoxically, teachers teach science-based knowledge and scientific discoveries, but their perceptions lack this link between the subject and science, i.e., they do not see themselves as promoters of science.

Another important finding was the realization that teachers align scientific literacy with deep knowledge in one field or discipline. It became most evident when teachers were speaking about their own levels of scientific literacy and compared this with disciplinary knowledge in the subjects that they teach. In their utterances, teachers highlighted that one universal scientific literacy and general understanding of the nature of science does not exist, but it is tied to

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the expertise in a specific discipline. Moreover, teachers' understanding about scientific literacy referred mainly to the procedural dimension or one's abilities to carry out a scientific study, collect and analyze data, etc. Much less attention was paid to the epistemology of science as well as the conceptual dimension, especially the social aspects, relations between science and society. In previous literature, it is documented as a disciplinary literacy that is developed by teachers as representatives of different academic disciplines and used to produce and construct knowledge within one specific disciplinary community (e.g., Zygouris-Coe, 2015; Rainey et al., 2017). As a conclusion, we agree with previous literature that there are risks with such an approach, as warned by Holbrook (2010). He notes that scientific literacy must by all means be developed in a meaningful social context—the real world outside the walls of the school, where the everyday challenges require interdisciplinary thinking and solutions that do not derive from one specific discipline. If there is too much emphasis on preserving the subject boundaries and focusing on the disciplinary content without links to a larger picture, the true purpose of teaching scientific literacy becomes hidden (Lederman, Lederman & Antik, 2013).

During the data analysis, it became obvious that scientific literacy is not integrated into the professional identity of teachers. Many of them did not assess their own scientific literacy as being high, and generally proposed that scientific literacy is possessed by those people who can be called as scientists because of their occupation and workplace—an academic institution or a scientific institute. For teachers it is much easier to identify themselves as being information literate, data literate, and media literate than science literate. These former literacies were familiar to teachers and these encompass skills that many teachers reported as being trained to use in their daily work. Our conclusion here is that this finding once again highlights the gap between everyday school life and science: teachers are familiar with the basic facts of science they trust science and use its results, but are not always aware that the knowledge of scientific methods and the understanding of the nature and process of science is necessary for everyone, not just scientists. Here again we established parallels with the Vision I on scientific literacy (Shamos, 1995). It is something to consider in the light of the recent educational reform School 2030 that is drawn on cross-disciplinarity.

Speaking about teacher (further) education, in the context of School 2030 and also within the post-pandemic context, we suggest adding additional emphasis on two issues. First, the broadness of the concept of scientific literacy is not covered sufficiently in teacher training programs. Our analysis shows that teachers are mostly directed toward learning the procedural aspects of scientific literacy, while the conceptual and affective domains lay untouched. Also, the conceptual clarity must be established, distinguishing between various literacies—scientific literacy, media literacy, information literacy, and other literacies, of course, also

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indicating the overlaps between these similar but still distinct concepts. And second, teacher educators should pay more attention to the cross-curricularity aspects of scientific literacy development of student teachers and also in-service teachers. Our results indicate that the subject boundaries influence the teachers' views on the concept of science and inevitably also their teaching of science. It would be preferable also for helping students to establish a coherence between different school subjects (McClune, Alexander & Jarman, 2012) which a highly appreciated path to take for implementing the Vison II approach in teaching science in schools (Valladares, 2021). Here we can refer to recent studies conducted in Latvia that highlight the necessary changes for teacher educators and teacher education curriculum in Latvia (Pipere et al., 2022; Odina, Mikelsone & Grigule, 2021), e.g., to include in all subject teaching more topics related to scientific literacy such as research ethics, presentation of scientific results, and others (Davidova & Zariņa, 2021; Jurgena, Cēdere & Keviša, 2015).

Our suggestion for future studies is related to the teachers' views on the structure of the concept of scientific literacy. In teachers' views, it was overlapping with various other literacies, especially media literacy and information literacy. Critical thinking was seen by our study participants as a fundamental aspect of scientific literacy, too. Of course, previous literature outlines that information literacy and critical thinking are necessary for the development of scientific literacy (e.g., Rosenthal, 2020; Takahashi & Tandoc, 2016), but they are not the same concept. Our small sample and qualitative approach allowed us to catch a glimpse here on the given problem, but our findings indicate that there is a need to study this further and capture the teachers' perceptions of science and scientific literacy knowing that the ways how teachers integrate scientific literacy promotion in their teaching solely depends on their scientific knowledge and their own understanding of science (Schwartz & Lederman, 2002).

Limitations of the study are related to the small size of our sample and the qualitative approach that does not let us generalize our findings.

Acknowledgements

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Stress Resilience and Coping Mechanisms of the Regional University Students in the 2nd Wave of COVID-19 Pandemic

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ABSTRACT

Stress is a typical reaction to internal or external factors that are disrupting equilibrium in one's life or daily routine. In this study stress in considered as a multifaceted factor resulting either in good or bad outcomes depending on one's mindset and context. The context of the study is the second wave of the COVID-19 pandemic when University students were forced to continue to pursue a remote learning experience and had to adapt to new learning norms and circumstances. The focus of the study is on how the pandemic and the remote learning have influenced students' stress resilience and how it correlates with their coping strategies. As for the theoretical framework authors have chosen *a biopsychosocial (BPS) model* where a challenge or a threat is related to the way we think about situational demands and find coping resources that are available to interact with the stressful situation. Stress resilience in this article is discussed as an effective comping mechanism in order to regain the equilibrium. *The aim of the study* is to explore the factors causing stress of bachelor level students in one of the regional universities of Latvia and their coping mechanisms with stress during the 2nd wave of pandemics. *The design of the study* is a complementary use of quantitative and qualitative methodology that allows in-depth exploration of students' experience during the second wave of pandemic. *The methods or instruments:* The authors chose students' diary as a means of reporting events that are causing stress in students' life as well as a questionnaire with the students who are engaged in diverse programmes during the second wave of the pandemic (n=196 students) and factors determining their stress resilience.

Keywords: stress resilience, coping mechanisms, pandemic, digitalization, higher education

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Introduction

The pandemic has started in year 2019 in China, in the city of Wuhann at the end of 2019 and expanded all over the world. The pandemic took place throughout year 2020 and this study was carried out in the 2nd wave of pandemic when universities have already made a transition to a remote teaching and students have already adjusted to a New Normal. Universities of Latvia have successfully adapted the model of remote learning in the 2nd wave of pandemic. Major social, political, and economic changes that took place worldwide due to COVID-19 pandemic have caused changes in everyday reality, work routine, life style, job structures and interaction patterns. Pandemic caused social distancing, lockdowns, thus leaving negative long-term effects on majority of people. The new situation caused stress among people resulting in a long term health and social implications. Uncertainty about the future made it difficult to plan the future and generated psychosocial stress among people. The current study focuses on students' stress resilience during the 2nd wave of pandemic and their coping strategies.

Anxiety and stress became normal responses in new circumstances. Anxiety can be considered as a normal reaction to a situation that is new and unpredictable, causing changes in concentration, irritability, anxiety, reduced productivity and interpersonal conflicts (Vinkers et al., 2020). Pandemic also has caused feelings of loneliness, the fear of being infected, and not receiving adequate information (Brooks et al., 2020). Stress impacted sleep, memory, and attention (Goff, 2011). Academically stress affected performance and students' ability to cope with tasks. Finally, it affected their ability to learn. *The New Normal* influenced peoples' feelings, thoughts and actions in new circumstances and affected almost all spheres of life.

The circumstances of a New Normal were perceived by students as loss, threat, or challenge. Some students were not able to follow remote classes due to a low internet connection or work obligations. Some students had a difficulty in attending online classes due to work obligations. This all was causing anxiety and stress. Adaptation to a new circumstances affected psychosocial and emotional development of undergraduates. Undergraduate students usually experience stress related to academic pressures and a lack of socialization with classmates and difficulty in adapting to changes in University's life and e-environment. A systemic literature review indicates that undergraduates are undergoing anxiety and stress and other mental health disorders (Auerbach et al., 2018; Jiao, & Zhang, 2007).

Uncertainty of the situation has caused problems with sleep and made some students to adopt sedentary lifestyles (Alzahrani et al., 2021). Some students perceived a new situation as a challenge, assessed their resources how they can do to adapt to new circumstances and were quite successful to adjusting to

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new circumstances. They assessed a new situation rationally if they can solve it, removed the threat, based on available sources and personal capacity and available strategies, while others complained and did nothing.

The perceptions of people depend on many personal and environmental factors. Coping is highly subjective and may lead to either homeostatic function or it might be a transformational experience leading to positive or negative change. Person's reaction to stressful situation is influenced by individual's profile, intellectual ability, and a willingness to take risks. The aim of the study is to explore the factors causing stress of bachelor level students in one of the regional universities and their coping mechanisms with stress during the 2nd wave of pandemics. A **biopsychosocial (BPS) model** serves as a good theoretical framework to relate stress and anxiety to a multiple factors, such as biological, psychological and social factors. This is a transdisciplinary and holistic approach indicating to the existence of interrelatedness of multiple factors. A dynamic interplay to all those components provides a comprehensive understanding of person's reaction to stressful events. Psychological events address thoughts, emotions and behaviour, as well as coping strategies and one's temperament. Psychological issues such as anxiety, low self-esteem, negative thinking can influence a well-being of an individual both directly and indirectly. Social aspect includes peer relationships, availability of support, socioeconomic status and situation at work. One of the criticisms of this model was its complexity and holistic nature and difficulty to apply it in a resource poor settings since it requires training and availability of multidisciplinary teams consisting of psychiatrists, mental health specialists, social welfare workers to allow a holistic understanding of the biological, psychological and social factors of an individual (Babalola, Noel & White, 2017). Still, biopsychosocial model holds a promise for team work of professionals for increasing of a well-being of an individual.

Coping Strategies in Dealing with a New Normal

New norms in social life and education made students to reflect on their inner strength that might elevate their resilience (Cosmas, 2020). Every individual has his/her own strategies for dealing with new circumstances.

Coping involves cognitive and behavioural efforts of students to manage stressful situations (Lazarus & Folkman, 1884). Ben-Zur et al. (2002) point to problem-focused and emotion-focused modes on reacting to a new stressful situation. *Problem-focused coping* is aimed at managing future threats and involves efforts of an individual to change his/her interaction with a new situation. *Emotion-focused coping* is aimed at reducing, preventing or tolerating emotional reactions to a new stressful situation. When a new situation can be controlled, problem-focused coping strategies dominate, while when new situation is considered as unchangeable, a person applies emotionally-focused coping (Lazarus &

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Folkman, 1987). Carver, Scheier & Weintrab (1989) pointed to limitations of problem and emotion-driven approaches by adding *active coping* and planning strategies.

There are several studies that are focusing on the use of problem focused coping strategies and indicate to a positive correlation with high achievement in examinations while dealing with stressful events in one's life (Ben-Zur, 2002). In some studies it was discovered that emotion-focused coping strategies correlate positively with psychological distress (Ben-Zur, 2002). The study carried out by Norlander, von Schedvin and Archer (2005) indicates, that *self-actualized affective* students' score was highest while the *self-destructive personalities* show lowest scores on coping with a new stressful situation. *Self-actualized* group of students had the lowest levels of stress, highest receptivity to change and active coping strategies, while the *self-destructive group* of students displayed the highest level of stress, lowest receptivity to change, and passive coping strategies. Among the coping strategies they have mentioned 'emotional support' and 'growth.' Self-actualized personality type of students displayed high positive transformational coping and growth in a new situation (Norlander, et al., 2005).

Self-destructive personality types of students have experienced high levels of stress. They were lacking receptivity to change, flexibility and were not capable to take a control over a new situation (Norlander, et al., 2005).

There are number of tools that were developed for assessing one's coping strategies in a new situation. Among them is SVF120 scale implying *20 coping strategies*: *positive coping strategies*: minimization, denial, distraction, relaxation, situation control, positive self-instruction; *and negative coping strategies*: rumination, resignation, self-blame. Emotional and behavioural withdrawal, and the use of alcohol are classical examples of *avoidant coping behaviour* (Lawler et al., 2005). *Passive coping* strategies are correlate with psychological distress and depression (Snow-Turel et al., 1996). Among the **active coping strategies** one can mention one's cognitive ability to use behavioural or psychological strategies to change stressor or view on how the stressor is perceived by developing higher adaptability to a new situation and psychological resilience. Resilience among young adults positively relates to extraversion and conscientiousness. Resilience among sportsman in competitive situations is higher for those who apply active coping strategies. Humour is also seen as active coping mechanism with a new and stressful situation in the face of acculturative stress (Cheung & Yue, 2012).

Numerous studies indicate to *faith, religion and spirituality* as significant factors that enhance greater resilience among the students (Cornah, 2006). Students engagement in religious activities, payers may help students to search for a meaning in the face of difficult circumstances. They are healthier and happier as compared with those for whom religion and spirituality is less important

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(Ellison & Fan, 2008). This study is focusing on stress resilience of students during the 2nd wave of COVID-19 pandemic resulting in anxiety, depression, health problems and the disruptions of everyday life patterns, as well as pervasive and lasting consequences for the mental health for many people.

Stress Resilience During the 2nd Wave of Pandemic

American Psychological Association (2019) defines psychological resilience as a process of good adaptation in the face of adversity, trauma, tragedy, threats and in the face of other significant stressors such as family, relationship problems or other problems. Resilience can be defined as one's capacity to adaptively overcome stress and to maintain normal psychological functioning (Southwick & Charney, 2012). Precker (2020) refines resilience as person's capability to bounce back in any stressful situation. There is no single definition of resilience. Still, Staroverky (2012) points to a set of characteristics contributing to development of resilience, such as optimism, altruism, moral compass, faith and spirituality, humour, good role models, social support from peers and family, ability to leave a comfort zone, and having a purpose in one's life, aim that helps to overcome failures and any difficulties, and resilience training. Rampe (2010) suggests ten pillars of resilience that are based in positive psychology: optimism leading to take positive action, acceptance of situation, focusing on potential solution, taking responsibility about one's life, overcoming the role of victim of new circumstances, building a network of support and planning a flexible strategy for dealing with challenges.

Latest research in the field have identified mechanisms encompassing genetic, developmental, psychological factors that determine development of resilience (Wu et al., 2013). From the developmental perspective, severe events in childhood affect negatively the development of stress response system, causing long lasting damage. Such factors as positive family relationships, peer relationships, supportive adults, and self-discipline that contribute to resilient functioning (Burt & Paysnick, 2012). Resilience has been widely studied among students and its effect on their well-being in alleviating depressive symptoms (Smith and Yong, 2017). Numerous studies indicate that resilient individuals have strong coping abilities and have a positive view on themselves (Szanton & Gill, 2010). Resilient people display confidence and determination that is critical for studies in the higher institution to endure adversity. Resilient individuals have behavioural, cognitive and emotional abilities to manage changes and crises (Alvord et al., 2016). Resilient people have more positive look on life, they see the bright side in every situation. Higher education students experience a number of problems, to begin with micro stressors such as academic requirements, financial issues to macro lever stressors, such as a new environment and new requirements (Kummaraswamy, 2013). As Carver et al., (2010) reported, optimists have

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low hopelessness and helplessness and less use of avoidance coping strategies in stressful situations.

Among the supportive measures one can mention social support from adults, peers, and a shared sense of values, health, supportive environment and religious beliefs, as well as help in developing mastery over life stressors (Werner, 2012; Southwick & Charney, 2012). Among the **psychological factors** that influenced one's resilience and stress tolerance are *cognitive processes, personality traits*, *optimism*, as well as active *coping mechanisms*. Optimism is seen as the expectation for good outcomes and the use of *active coping strategies*, larger social networks and connectiveness (Colby & Shiften, 2013). Friends and family members also play a critical role in building students' resilience (Kozina, 2020).

Among the other factors of resilience to be mentioned are *cognitive reappraisals*: ability to monitor negative thoughts by replacing them with positive ones (McRae et al., 2012). One's ability to cognitively reassess traumatic or stressful events in one's life can help in developing higher resilience. As Victor Frankl wrote, finding meaning even in the most devastating circumstances, is the most powerful motivation and a diving force (Frankl, 2006). People with a cognitive reappraisal ability exhibit higher resilience. Moral compass or value system is typical for resilient people. Religion or spirituality is seen as a facet of one's moral compass (Southwick & Charney, 2005).

In the circumstances of current crises this is essential to learn to take control over a situation as much as possible. As Vinkers et al. (2020) assert that resilience exists not only at the individual but also at the community level. There is some kind of communal resilience that helps to cope with a new situation. In Latvia, local Municipalities supported schools with technologies for the disadvantaged families, Universities have offered training for the staff members to work online. The first outbreak of pandemic equipped universities and students with the resources to handle a new situation in case of its reoccurrence. Interventions carried out during the first wave of pandemic, like ensuring access to studies in an online environment and taking initiatives locally, helped all agents involved to deal with the situation more efficiently. Numerous studies have been conducted on stress resilience among the students from nursing programs who experienced the highest level of stress (Liang et al., 2019). Fostering students' resilience is particularly important to be successful at the university and in building inner strength. Such training fosters students' positivity, problem solving ability and resourcefulness. Among the factors that foster resilience are peer support, mentoring and networking (in whats up groups or other media).

Resilience Scales

There are numerous tools available to measure resilience. Among the popular ones are *Connor-Davidson Resilience Scale (CD-RISC)* that measured resilience in

stressful conditions and contains such aspects of resilience as personal competence to deal with stressful events, acceptance of a need for a change, tolerance of stress, control over a stressful situation and spiritual strength to overcome all the difficulties. *Academic Resilience Scale (ARS-30)* helps to preserve even in the midst of any difficulty and to gain achievement. It focuses on preservice, adaptive self-seeking, negative affect and emotional self-response. *Scale of Protective Factors (SPF)* developed by Ponce-Garcia et al (2015) focuses on resilience for the individuals who have experienced trauma. Predictive 6-Factor Resilience Scale (PR6) focuses on self-efficacy, emotional regulation, preservice and hardness, reasoning and collaboration. *The Ego Resilience scale (RS-14)* developed by Block and Kremen in 1996 measures one's adaptability to new circumstances.

Coping Strategies Among University Students

There are numerous qualitative studies that have been carried out on coping strategies among the university students. For example, qualitative semi-structured interviews were carried out with eight academically successful Latino students (Borjian, 2018), indicating to a high motivation as a main driver for an academic success and survival in any difficult situation. Individual interviews were carried out with ten at risk students (Bowen, 2016) that indicated to supportive strategies, strong peer group support, adult mentoring and intrinsic motivation as the main coping strategies in the university setting. Another qualitative phenomenological study carried out was focusing on the experience of Latino students (Cavazos et al., 2010) and revealed that goal setting, interpersonal relations, intrinsic motivation, internal locus of control are the main factors of resilience in the educational process. Another qualitative study involved interviews with twelve academically successful Latino students (Welsh, 2012) and pointed out to the importance of family and social support in the process of remote learning. Numerous studies have proved that by improving students' stress resilience, Universities contribute to students' success in academic performance and enable them to deal with stressful events.

Coping strategies relate to cognitive and behavioural changes and management of internal and external stressors. Several studies have singled out three main coping strategies: 1) *problem-focused coping* that is task-oriented coping, 2) *emotion-focused coping* that help with diminishing stress via emotional responses, like anger and self-preoccupation; and 3) *avoidance coping* strategies like avoiding stressful events rather than actively dealing with them (Chen, 2016). *Positive coping strategies* are leading towards positive adjustments in stressful events and decreased a level of anxiety, and students who were more optimistic and used positive coping strategies could manage stress more easily. The research confirms that female students use help-seeking behaviours and emotion focused coping strategies more as compared to males (Liu et al., 2017). There is higher use of

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positive coping strategies among medical students in comparison with non-medical students. This can be explained that medical students have more knowledge of coping strategies and mental health than non-medical students (Wu et al., 2020).

Research Methodology and Participants

For the purpose of this study a questionnaire was carried out among the regional university students on their main stressors, stress resilience and coping mechanisms. In total, $n = 196$ students took part in a questionnaire. The questionnaire was offered to fill in to all students of education and nursing program in an online format. Students were asked to fill in a questionnaire on voluntarily bases. Among the participants were the students of education, management, nursing and IT. The majority of participants who comprised the sample were bachelor level nursing and sport students. According numerous international studies this group of students experienced stressful situations more often than other students since they were having huge workload during the pandemic, they were working under a constant threat and fear of getting infected.

To ensure the validity of data, the authors have used students' diaries and their self-monitored data about their everyday stressors and coping strategies. In depth qualitative meta-ethnographic approach on students' perspectives contributed to building an overall picture on students' stress resilience. The other research method used for the purpose of this study were students' electronic diaries. They were asked to monitor stressors and coping strategies weekly on a voluntarily bases. The researchers have guaranteed the anonymity of the research participants.

All data was gathered, carefully categorized and analysed. Among the limitations of the study is a single regional university therefore findings cannot be generalized to other Universities. Another limitation is a low response rate due to electronic survey distribution. Despite of a low response rate, the sample was substantiated of ($n = 196$) participants, which is sufficient enough to examine statistical data. The authors also considered selection bias of students who took part in this study as an additional potential limitation, since majority of respondents were from nursing training programs. But, gathering students' perspectives on resilience is essential for filling up the gap and informing training practice. This study has limitations in a sense that sample is comprised of a small sample of regional University and can not be related to international settings.

Research Findings

The survey data indicated that among the most frequent problems during the pandemic the students have mentioned sedentary way of life (Mean = 2.08), and

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a feeling of being tired (Mean = 3.50), as well as difficulty in getting up in the morning (Mean = 2.62), anxiety (Mean = 2.25), and a difficulty with concentration (Mean = 2.35). Among the main worries/stressors the students have mentioned was not having enough time for rest (Mean = 2.16), doing thing in a hasty way (Mean = 2.27) without a deeper engagement and understanding of an issue; not having enough time for hobbies (Mean = 2.10) and not being able to cope with personal problems (Mean = 2.75). The main stressors were related to students studies rather than to their everyday life. Students have developed a good balance between their personal life and studies, therefore not all stressful situations are related to their studies.

Data derived from students' diaries indicate that among the most often mentioned stressors in students' diaries are *factors related to their family life*, like illness or a death of a family member, care of elderly family members, financial difficulties, and *everyday issues*, like, forgetting a pin code, health issues, the noise of drilling behind the wall that irritates the students; *physiological issues*, like, insufficient sleep, back pain from a lack of movements while studying at home office. Since many students combine their studies with work, they have mentioned a number of *work related stressors*: conflicts with the colleagues at work, intensive workload, fear of getting infected at work, not being able to attend classes because of a heavy workload at work. Majority of respondents (*n* = 123) were students who are engaged in nursing, therefore, they have mentioned their workload as one of the stressors along with e fear of being infected, lack of time, stress caused by a fear of vaccination, fear of increasing accommodation fees, health issues of family members, positive COVID-19 test result. Among the main *stressors related to their studies* they have mentioned difficulty to combine work and studies, to attend classes, to complete all the assignment in time, back pain because of long hours spent in zoom. Since the research was carried out during the 2nd wave of pandemic, students partly adapted to a new situation in the university and related stressors mainly to their private and family life. Since majority of students are having their families they have developed a good study-work—family life balance, therefore studies in the university was not their main stressor.

Among the coping strategies during the 2nd wave of pandemic as mentioned by Carver (1998) and Norlander et al. (2002) as the most *highly effective* were social support that was received from the family members and friends, *among the low effective strategies* in a long run were the use of alcohol and sweets.

Among *the cognitive and transformational* strategies were one's ability to change ones destructive and negative thoughts about one's future, but among the *growth strategies* the students have mentioned ability to accept *the situation philosophically*, not being worried about things that cannot be changed or controlled and taking control over the things that can be controlled or changed.

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Among the *healthy coping strategies*, students have mentioned: a healthy diet, sport, listening to music, expressing one's emotions, time management, aroma therapy, crying while watching a sentimental movie, walks in the nature, time spent with the family members, cleaning the room, swimming, humour, fishing and gardening.

Table 1. Students Responses in Their Diaries

Response to a stressful situation	Description	Example from students' diaries
Minimization	Devaluate intensity, duration or importance of stress	'This situation will end one day, it cannot last forever'
Distraction	Distraction from stress related activities/ situations	'In order not to think about the future I take a bigger workload at work and study and do both have time to be depressed or stressed'
Substitute Gratification	Turn to positive activities	'I try to find positive emotions in small everyday things: I am listening a good music, going for a walk,
Situation control	Analyses of situation, planning actions, controlling solving problem	"if something is unclear, I contact my mentor and clarify the situation' 'Every evening I discuss things with my husband, we share some worries and think how to solve them'
Control of Response	Keeping ones reactions under control	'When I cannot cope with a situation, I go for a walk, hug the tree and get more positive energy out of it. '
Positive Self-instruction	Encouraging one to control situation	"I try my best to adjust to a changing daily routine, changing regulations' ' I go and plant flowers, meet friends and discuss our concerns and worries'
Social Support	Looking out for somebody to talk, for social support to resolve stressful situation	"In case of some unresolved problems I talk with my family members, I go for regular weekend trips with them or to suburbs.'
Avoidance	Avoiding stressful situation	"I prefer not thinking about pandemic at all as if it does not exist at all"
Escape	Tendency to escape a stressful situation	" In order not to spoil my mood and not let the situation in, I simply was focusing on my hobbies, I was listening to music and pretending that the situation with Covid is a fiction, it is only artificially created reality by somebody"
Rumination	Breaking off from ones destructive thoughts	"I have learned to switch my attention to other things, restarted redecorating my apartment, started jogging."
Resignation	Giving up feelings of helplessness	" Even in helpless situation I try to find a solution"

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As one of the students wrote: 'I am listening Beethoven's sonata and it always improves my mood.' While the other wrote: 'I have learned to accept the situation as it is.' or '*I look at things philosophically and do what I can and what I can change.*' Some students have mentioned cognitive **reasoning** what they have practiced in stressful situations: '*In stressful situation I stay calm for a while and try to analyse things, until the picture gets clearer and the solution comes into my mind.*'

Majority of students in their diaries have mentioned social support as a coping strategy that they have received from different sources: family members and friends, as well as from their peers. As one of the students wrote: '*Even a short message received in my smart phone from my friend is worth more than ten thousand words in time of pandemic.*'

Among *unhealthy or low effective coping strategies in a long run* students have mentioned an overuse of sweets, coffee and alcohol. Among the self-destructive strategies, students have mentioned fearful thinking, depressive thoughts about the future, one's health.

Among the most frequently mentioned coping strategies, students have mentioned physical exercises, listening to a preferred music, better time management, waking, time spent with their family and friends, yoga, meditation, sweets and alcohol.

Table 2. Pearson Correlation Between Different Aspects of Students' Self-Care and Stress Resilience

Correlations		
Indicators of Self-Care		
Self-care – Physical aspect	Pearson Correlation	.364
	Sig. (2-tailed)	.000
	N	198
Self-care – Psychological aspect	Pearson Correlation	.146
	Sig. (2-tailed)	.040
	N	198
Self-care – Emotionally	Pearson Correlation	.234
	Sig. (2-tailed)	.001
	N	198
Self-care – Spiritually	Pearson Correlation	.075
	Sig. (2-tailed)	.296
	N	198
Self-care – Social-Relational	Pearson Correlation	.161
	Sig. (2-tailed)	.024
	N	198
Self-care in educational process	Pearson Correlation	.192
	Sig. (2-tailed)	.007
	N	198

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The qualitative part of the study indicate to quite good level of emotional and physical self-care among the students, as well as a spiritual care. The higher is self-care for oneself in adverse situation, the higher is students' resilience in adverse circumstances. Students have managed to establish good relationships with peers and families as well as found ways of emotional coping as strong factors of resilience.

The highest level of care among students was in the *physical* (Mean = 1.69) *and emotional* (Mean = 1.95) dimension of self-care, the lowest indicator was for a *spiritual self-care* (Mean = 1.56). The higher was students' emotional sphere, the higher is stress resilience (r = .234). Emotional sphere relates to students' ability to maintain good relationships with people who are important in their life, receiving from them support and understand, allowing to express emotions (anger, sadness), finding things that make them laugh, re-reading favourite books, and watched movies. The indicator of *psychological self-care* (Mean = 1.53) include care about themselves, taking into account one's inner experience by listening to beliefs, feelings, practicing strategies how to reduce stress in life, being open to receive psychological support from others. This means that during the first wave of pandemic students have developed mechanisms of emotional self-care (management of emotions, walking, doing exercises) so that during the 2nd wave of pandemic these indicators were quite high and increased higher stress resilience. The better they were able to cope with their emotions, the higher was there stress resilience.

Conclusions

The coronavirus pandemic has caused a long term impact on students' everyday life and affected their life style and communication patterns. Anxiety and stress were normal responses in these extreme circumstances. Some students responded to a new situation highly adaptively, dealing with emerging challenges, while some students were unable to cope with a new situation. Therefore, the impact of the pandemic is very heterogeneous. Coping is highly subjective and may lead to either homeostatic function or it might be transformational and lead to positive or negative change. Students' reaction to stressful situation is influenced by individual's profile, intellectual ability, and willingness to take risks.

Recourses and coping strategies during pandemic affected the whole community. Among the most widely adapted coping strategies University students used *cognitive problem coping strategies* and a *social support* (keeping ties with friends and families, networking). Promoting social connectiveness is of the most importance, since loneliness and social isolation made more difficult to overcome pandemic.

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Among the most efficient strategies as mentioned by the students were planning a daily routine and promoting self-care. Physical exercises and a healthy diet are among efficient means to promote stress resilience as mentioned by the students. One of the factors that can facilitate coping with a new situation, is efficient leadership in the organizations that helps students and staff members with the clarification of a new situation at work.

The upcoming pandemics will continue to affect students therefore governments and educational institutions need to be ready to provide efficient means for building resilience. Resilience training can mitigate the effects of the diverse events and will build stress resilience of students during any upcoming global pandemics. Gathering students' perspectives on resilience is essential for filling the gap in the current research and informing training practice.

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Teachers' Reflection on Personalized Learning

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ABSTRACT

Personalized learning as a new trend in inclusive education is undoubtedly influenced by teachers' reflections before and after its implementation. The carried-out reflection allows each teacher to change previously established positions for the implementation of the educational activity, to reach the ability to change his points of view according to the strengths and potential of the students, and thus achieve greater efficiency in the learning process. Through realized reflection, each teacher creates creative attitudes towards and for the learning process and undoubtedly a more complete unity between consciousness and responsibility for the learning process and behavior.

A focused study was conducted with three groups of teacher-respondents. The groups are structured accordingly: the first group of 15 primary teachers, the second group of 15 high school teachers, and the third group of 15 resource teachers. The reflective activity of the three groups of teacher-respondents at different levels of reflection towards personalized learning is investigated: intellectual reflection in learning, personal reflection, reflection as dialogue, reflection in problem situations, and undoubtedly praxeological reflection in the two variants of manifestation: professional and technological reflection. The results demonstrate higher levels of reflection as dialogue and praxeological reflection in primary and resource teachers compared to primary teachers, and higher levels of reflection in problem situations and intellectual reflection in primary teachers compared to primary teachers. It turns out that the reflection of the teacher-respondents on personalized learning is strongly influenced by the cultural and existential reflection in the three groups of respondents. With all the teacher-respondents, the critical reflection towards personalized learning is very vividly demonstrated, which finds expression in the presentation of one's own pedagogical experience and one's own pedagogical intuition. There is a dynamic from a-reflection to reflection to personalized learning with the A-effectiveness of both respondents and students.

Keywords: inclusive education, personalized learning, reflection, self-efficacy, teachers

Introduction

Inclusive education develops in the direction of developing an approach to identifying the strengths and potential of each student and each teacher. Personalized learning makes it possible to implement this approach, in which the teacher, according to his own strengths, teaches the whole class in a way that each student can perceive, understand, make sense of and learn the learning content according to his strengths and the capabilities he possesses. The implementation of personalized learning is unthinkable without teachers' reflection on it. The carried out reflection allows each teacher to realize more and more creative attitudes towards and for the learning process, and more complete unity between consciousness and responsibility for the learning process and behavior according to the student's potential. By applying the personalized learning model, each teacher can and does achieve greater effectiveness in the learning process for each student.

Main Text

As a relatively new learning model, personalized learning does not present a uniformly accepted definition of personalized learning. According to Bray and McClaskey (2015), personalization is learner-centered and learner-driven. According to them, there is a difference between personalization, differentiation, and individualization. The definition they derived is multi-layered and aimed at favoring in leadership "learners who:
- know how they learn best, and participate in the design of the curriculum and the learning environment.
- have flexible learning anytime and anywhere;
- have the right to vote and choose about their studies;
- have quality teachers who are partners in learning;
- use a competency-based model to demonstrate mastery;
- independently direct their studies;
- design their academic path for college and career." (Bray & McClaskey, 2015).

The stated leadership favoring of learners is actually essential in personalized learning and is associated with the active participation of each learner in the learning process and becoming an expert in their own learning. The teacher in personalized learning is transformed from a teacher from the department, from a sole and undisputed provider of knowledge into a facilitator and partner in the learning process. In personalized learning, each learner has perceptual, cognitive, and emotional-social access to learning content and has the right and freedom to choose his own most effective learning style, to learn at his own pace, and achieve academic success that he can easily transfer to live outside of school and throughout life.

At the same time, as noted by Schmid and Petko (Schmid & Petko, 2019), "a clearly defined concept of personalized learning is still missing. Rather, it serves as an umbrella term for educational approaches that attempt to meet the individual abilities, knowledge, and learning needs of each student." In this aspect, phenomenological profiles of personalized learning are more common, in which personalized learning is considered to be an optimizing process of school learning with the achievement of synchronicity between the educational context and the active participation of each student according to his characteristics and abilities.

Undoubtedly, personalized learning does not offer ready-made recipes for application in the learning process, and even as a general term for educational approaches, suitable and corresponding to the needs and strengths of learners already has its specificity. The most essential feature of personalized learning is targeting the strengths of the learners and the strengths of the trainers. In this apparent shift from the medical model that has long dominated education to an inclusive model of education lies the power and values of personalized learning. Identifying, understanding, and matching students' strengths is possible through the structuring of individual student profiles, which are sometimes formalized to the questionnaires used. In a qualitative aspect, the individual manifestations of teachers' reflection are much more valuable for outlining the trajectories of students' strengths and for the realization of personalized learning.

"Reflection is a complex concept subject to many interpretations with subtle variations" (Dahlberg et al., 2002). Reflection is defined as:
- "a process, an intellectual procedure that requires active engagement on the part of the individual;
- a phenomenon that occurs when an individual finds himself in a confusing, difficult-to-solve situation (dilemma) or experience;
- a process that involves examining one's own cognitive activity or one's personality traits, one's responses, beliefs, and assumptions in the context of one's situation and available means of action;
- the result of complete integration of new concepts (understandings) about the performed cognitive actions and personal qualities." (Hadjiali, 2011).
- "socio-culturally determined, instrumental integral procedure (process, set of conscious and controlled mental actions), directed and meaningful to self-knowledge;
- knowledge of one's own cognitive activity and one's own personality.
- mental dialogue with the other, in which the logic and content of the partner's thinking is reproduced, and the subject becomes self-aware through the control and awareness of the impact of his own behavior on the partner.
- mental tracking, and control over the realization of the subject's knowledge and qualities in his practical activity (reflexive control over the objectification and technologization of his own knowledge and qualities)" (Vasilev et al., 2005).

It could be synthesized that reflection is a multidimensional construct of mental activity for self-knowledge, self-acceptance, self-evaluation, and self-development.

In this context, each teacher carries out personalized intellectual reflection in its two main manifestations: retrospective reflection (interpretation of own professional competencies with a view to past learning situations – conventional and extreme) and prospective reflection (creating a predictive cognitive scheme for solving a possible learning situation in the future). The two spaces of intellectual reflection can function as a critical reflection that establishes an already implemented or constructs a new pattern of learning activities. Critical reflection is realized through the freedom each teacher has as a leader in the classroom and through which they can implement personalized learning at different speeds in each individual class and with each student.

In both manifestations of intellectual reflection, the teacher considers his own self-efficacy. Undoubtedly, intellectual reflection is impossible without personal reflection.

Personal reflection bases the self-determination of professional self-efficacy and focuses both on the outcome of one's own teaching style and personal qualities. Personalized reflection is not a personal reflection. Personalized reflection is an umbrella term that covers the intellectual, personal, and praxeological (professional and technological) reflection of the teacher. The teachers' reflection on personalized learning presents the crossing of the barrier from misunderstanding or incomplete understanding of inclusive education to a full understanding and rationalization of inclusive processes through personalized learning. The reflection is "the practice of a rigorous self-examination, through which to investigate the processes of meaning-origination" (Moran, 2000).

Thanks to personalized reflection, each teacher realizes and interprets not only cognitive information about his own professional activity in the direction of educational inclusion. Moreover, each teacher in the personalized reflection realizes and makes sense of his social professional acceptance, i.e. how others perceive and interpret his demonstrated professional competencies in relation to inclusive education.

For the implementation of personalized learning, Watson and Watson (2016) derive universal principles: personalized instructional goals, personalized task environment, personalized scaffolding of instruction, personalized assessment of performance and learning, and personalized reflection. The principle of personalized reflection stands out quite clearly.

Personalized reflection is a foundation for realizing the universal principles of personalized learning because they cannot be realized without reflection on their application, reflection on the results of the application, and reflection on the manifested personal qualities. In the modern pragmatic world, there is little time left for reflection, evaluation of results and experiences, consideration, and

overall judgment of behavior i.e. activities as required by reflection, including reflection on personalized learning. Teacher reflection is not only awareness, evaluation, and rethinking of one's own behavior in a school environment. The teacher's reflection is a significant psychological resource for the implementation of educational activities and for the expression of creative thinking and the creative potential of the teacher.

Methodology

The research was conducted using the focus group method.

In July 2021, a training session on "Personalized Learning in the Classroom" was held. Teachers implemented personalized learning with one class during the 2021–2022 school year, which went through learning models: distance in an electronic environment, face-to-face learning, and blended learning. In June 2022, training with additional information on the topic "Personalized learning in the classroom" was conducted again, after which research was conducted using the focus group method.

Participants in the study

Participants in the research are 45 teachers, who are structured into three groups:
- first group of 15 primary teachers,
- second group of 15 high school teachers
- third group of 15 resource teachers.

In the selection of the participants in the study, two criteria are followed: voluntary participation and results of traditional interview. When conducting the research, each group was differentiated into three sub-groups of 5 teachers. There are a total of 9 focus sub-groups in the study.

Procedure

Each sub-group is assigned 2 tasks.

The first task is to identify five strengths and five weaknesses of personalized learning through experiential learning and expertise. There is a requirement to arrange the answers in order of importance.

The second task is carried out by a whole group and asks the respondents to determine the type of reflection that is brought out when conducting personalized learning in a percentage ratio: intellectual reflection in learning, personal reflection, reflection as dialogue, reflection in problem situations, and undoubtedly praxeological reflection in the two variants of manifestation: professional and technological reflection.

The execution time is limited to 30 minutes for each task.

Results

The results show aggregated responses ranked first, second and third in order of importance from the three sub-groups of the primary teacher group. The responses that the group of primary teachers considered to be most significant is listed first, the responses of lower importance are listed second, and the responses that the group of primary teachers considers least significant are listed third. The responses from the three subgroups are summarized for the whole group of primary teachers and are presented in Table 1.

Table 1. Frequency-ranked responses from the primary teacher group

Primary teachers		
	Strengts	Problematic side
1	Unleashing the potential of every student	More time for teacher preparation
2	Greater teacher commitment	A large number of students in a class
3	A more accessible and interesting way of learning	Difficult application in distance learning

Figure 1 presents the correlations between the individual types of reflection from the group of primary teachers. The results are summarized from the responses of the three sub-groups of the primary teacher group.
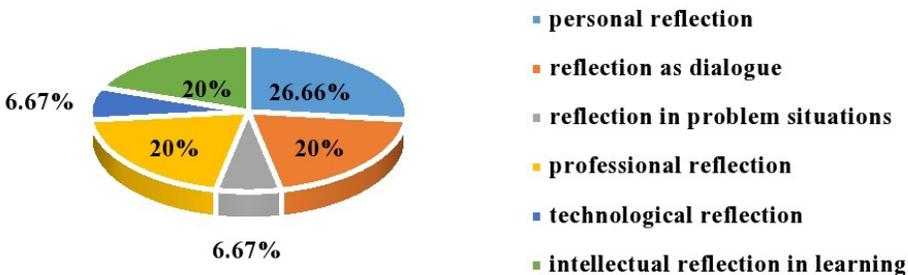
Figure 1. Reflection in the group of primary teachers

The results show aggregated responses ranked as first, second and third in order of importance from the three sub-groups of the high school teacher group. The answers that the group of high school teachers considered to be most significant is listed first, the answers of lower importance are listed second, and the answers that the group of high school teachers considers least significant are listed third. The responses from the three subgroups are summarized for the entire group of high school teachers and are presented in Table 2.

Table 2. Frequency-ranked responses from the high school teacher group

High school teachers		
	Strengths	Problematic side
1	Learning at different speeds	It cannot be applied to all subjects
2	Peers work with peers	Teacher overload
3	An opportunity for self-expression and to reveal potential	Lack of criteria for evaluating student achievements

Figure 2 presents the correlations between the individual types of reflection from the group of junior high school teachers. The results are summarized from the responses of the three sub-groups of the high school teacher group.
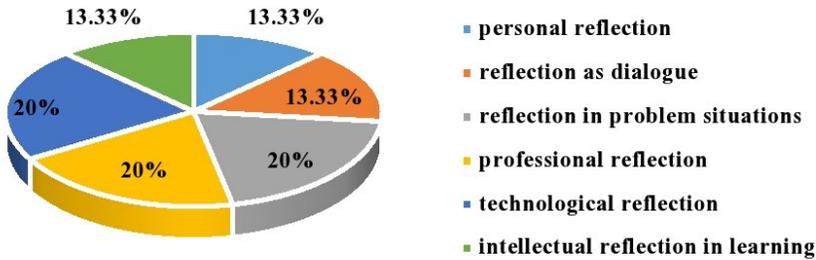
Figure 2. Reflection on the group of high school teachers

Only responses ranked first, second, and third in importance by the respective sub-group of the resource teacher pool are displayed in the results. The responses that the resource teacher group considered to be most significant are listed first, the responses of less importance are listed second, and the responses that the resource teacher group considers least significant are listed third.

Table 3. Frequency-ranked responses from the resource teacher group

Resource teachers		
	Strengths	Problematic side
1	Unlocking the potential of every student	Teacher overload
2	Implementation of project-based learning	A difficult application in distance learning
3	Teamwork	It cannot be applied to all students with SEN (special educational needs

Figure 3 presents the correlations between the individual types of reflection from the group of resource teachers. The results are summarized from the responses of the three sub-groups of the resource teacher group.
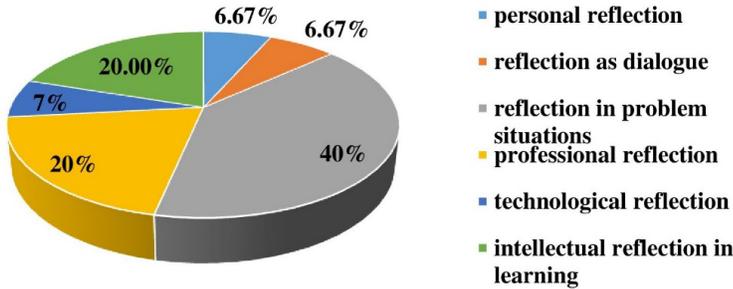
Figure 3. Reflection in the group of resource teachers

Discussion

The presented results (Table 1, Table 2, and Table 3) demonstrate a reflexive delineation of the strengths and problematic aspects of personalized learning. It is noteworthy that there is a dynamic in the realized reflexive potential regarding personalized education both in the individual subgroups and in the entire groups. In two of the subgroups of primary teachers, "greater teacher commitment" and "More time for teacher preparation "were perceived as both a strength and a problem. This, at first sight, the contradiction in the two separate sub-groups is related to a reflection of the primary teachers' own professional behavior as independent subjects of pedagogical activity. Primary teachers work with the individual class more time, almost throughout the school day. In the educational process, they can and do manage the reflective space of the class more holistically than high school and resource teachers. "Reflective space" can be understood as a space constituted by socially established arrangements that enable and hold reflecting practices in place. In this sense, creating a "reflective space" means creating arrangements to support such practices (Thelin, 2020). High school teachers teach more than one class and many more students and spend much less time with the individual class than primary teachers. In addition to having more minimized opportunities to manage the reflective space of the class, they also have significantly more limited time resources for reflection on learning activities with individual students. At the same time, high school teachers have much more methodological resources for innovative learning activities due to the older age of the students. Resource teachers have the opportunity to manage the reflective space of students with SEN in two trajectories: in the classroom (with joint teaching) and in the resource office (with individual work), i.e. reflective dimensions of a different model of learning activities are present. The triggering of praxeological reflection (knowing oneself through and in one's actions and the results obtained) in the three groups is based on different kinds of social

interactions with students, and reflection as a dialogue demonstrates differences that influence praxeological reflection. Another interpretation of the obtained differences could be given in the direction of the personal and existential reflection of the teachers from the three groups, which find expression in self-determination, self-efficacy, and possibly in motives for self-affirmation. In the case of primary teachers, due to the nature of their professional activity and due to their acceptance as the Significant Other of the students in this age period, the reflexive responsibility (expressed in personal and existential reflection) for self-knowledge in the context of "greater commitment of the teacher" is activated and "more preparation time" that "may or may not" take place. While a similar existential reflexive dilemma is not manifested in high school and resource teachers. But, the appearance of the two statements in dichotomous positions gives reason to argue that primary teachers bring socio-professional acceptance of personalized learning and realize it by continuing to look for strong and problematic aspects of "greater self-engagement". Personal and praxeological reflection raises questions about ways to reduce engagement, about optimizing the personalized learning process, and about specifying which engagement is high: cognitive, emotional, or social. An analogous reflection is also manifested regarding "more time for preparation" with self-analysis and self-knowledge of personal and professional qualities. Obviously, self-efficacy provokes further reflexive dilemmas. A spiral effect occurs: the acceptance and implementation of personalized learning by primary teachers provoke personal reflection, which leads to an increase in self-efficacy manifested in the implementation of personalized learning, which in turn again gives rise to personal and individual reflection, etc. It manifests itself as "reflection as learning about the self" (Frick et al., 2010).

"Teacher overload" appears to be a favored problematic aspect of a reflective position among high school and resource teachers. Obviously, the respondents demonstrate personal reflection at a relatively lower level, where cognitive and emotional engagement with regard to personalized learning is not brought to the level of independence and activity. Answers about problematic aspects such as "a large number of students in a class", "cannot be applied to all subjects", and "cannot be applied to all students with SEN" speak in favor of this argument. The pedagogical arsenal of the respondents still shows resistance to a holistic application of personalized learning. The location of this resistance can be sought in personal reflection and in the reflection on problem situations. The explanatory models differed for the two groups of teachers. While for high school teachers, the large number of students and the different classes can cause difficulties in the reflection in dialogue and in praxeological reflection, it is likely that for resource teachers the difficulties in these two types of reflection are related to the different types and the different degree of disabilities that provoked SEN. The interpretation of the reflexive answers to the problem aspect of "difficult application in

distance learning in an electronic environment" is analogous. Existential reflection is not strongly manifested and rather tends to non-acceptance of personalized learning among high school teachers.

In the nine subgroups, "unfolding the potential of each child/student" by primary and resource teachers and "opportunity for self-expression and revealing potential" by high school teachers are reported as strengths. On the one hand, interpretation can be brought in the direction of mastered knowledge about personalized learning, but on the other hand, interpretation can be brought in the direction of socially relevant motivation or momentary self-actualization. The reflexive consideration of the statements: "more accessible and more interesting way of learning", "learning at a different speed" among primary teachers; as well as the statements: "peers work with peers" among high school teachers, and the statements: "applying project-based learning", "teamwork" among resource teachers testify that as the sovereign implementation of personalized learning increases, a personal and professional reflection of the respondents.

It can be seen from the results of the second task (Figure 1, Figure 2, and Figure 3) that personal reflection is shown to be the highest among primary teachers – 26.66%, while among high school teachers it is 13.33% and among resource teachers, it is 6.67%. These diverging results are interesting because there is a decreasing dynamic in terms of increasing educational attainment and the use of special learning support methods engaged in by the three groups of respondents. In an explanatory model, the manifestation of a reflexive thinking strategy with the search for new knowledge and skills, new goals, and tasks based on mastered information about personalized learning can be indicated. The highest result obtained among the respondents from the group of primary teachers can be explained by realized professional pragmatics for personalized training. While for the respondents from the groups of high school and resource teachers, the results are lower probably because for the respondents there is no categorical evidence of self-actualization in the direction of personalized learning, and new questions and new hypotheses about the process of personalized learning are provoked.

Professional reflection is the same for all three groups – 20%. The result obtained is surprising, but not entirely unexpected. Reflection is a demonstration of an objective self-assessment of subjectively possessed capabilities. Apparently, the respondents consider that the implementation of personalized training is not yet carried out by themselves at the expected level of their professional competencies. It is possible to show metacognitive reflection on one's own knowledge and skills in taxonomized levels: acquired and mastered, missing and necessary professional knowledge and skills. Respondents "know and are able to recognize the gaps and advantages of their level of knowledge and skills" (Levterova, 2018). Realized professional engagement with personalized learning processes

elicits a higher order of reflective metacognitive regulation. Reflection, in fact, is a process of preparation for ever higher self-efficacy, including the implementation of personalized training by teachers.

The low score obtained for technological reflection (6.67%) among resource teachers is surprising because they use the most assistive and adaptive technologies in the process of supporting learning. At the same time, the obtained result has its logic of explanation related to reflection as making sense of the experiences of the present, and reflection as making sense of the goals of the future. For respondents from the group of primary teachers, "technological reflection" is 6.67%, and for respondents from the group of high school teachers, it is 20%. The latter, in turn, have to make most often technologically based decisions in the educational process, and reflection on already achieved goals increases the optimistic disposition for the future. The so-called reflection towards the past and the present with the "future self-continuity" hypothesis is observed. "Individuals who felt more similar to their future selves may have made more prudent decisions because of their perceived connectedness to a future self ... Although it is turned to the past ..., this reflection does not remain chained to the past ..., but continues in the future" (Ersner-Hershfield et al., 2009).

The result obtained for "reflection as dialogue" was definitely a surprise with results for the respondents from the group of resource teachers (6.67%), high school teachers (13.33%), and primary teachers (20%). Expectations for high "reflection as dialogue" among resource teachers are not justified. For "reflection as a dialogue", the lower values of the result for the respondents from the group of resource teachers can be linked to the more limited contact with the student community, individual contacts are more frequent, mainly with students with SEN. Obviously, the high "reflection in problem situations" (40%) weighs more than the low "personal reflection" (6.67%) and the low "reflection as dialogue" (6.67%) among the resource teachers. This burden of a formed strong space of "reflection in problem situations" can be explained by the fact that resource teachers encounter in their work very often problem situations of a different nature when working with students with SEN. The fact that "reflection as a dialogue" includes external and internal dialogue should not be overlooked, i.e. both with others and with oneself. With resource teachers, the socio-temporal dimension of external dialogue is narrower, i.e. social interactions with students are more minimized at school, and accordingly, reflection as dialogue presents a low result. Reflection as dialogue is usually closely related to and cultivates "intellectual reflection", and this theoretical postulate is also observed in the respondents from the group of primary teachers, who are most often in a wide dialogic space with high temporality with their students.

"Intellectual reflection in learning" (personalized learning) manifested results of 6.67% in the group of primary teachers and in the group of resource teachers,

while high school teachers provided a result of 13.33%. The higher score of the high school teacher respondents can be attributed to an awareness of the knowledge bases and practice-proven teaching methods related to the acquisition of knowledge by their students. Overall, the "intellectual reflection" on personalized learning among respondents from all three groups is imbued with critical intentionality. Apparently, the reflective self is not yet fully ready for the implementation of personalized learning, despite the knowledge and experience it possesses.

Regarding "reflection in problem situations", the result of the respondents from the group of primary teachers was 6.67%, that of high school teachers was 20%, and that of resource teachers was 40%. Obviously, the respondents from the group of resource teachers were most often in effective reflective situations towards personalized learning, and the reflection was shaped as norm-determining and resulted in acceptable subjective self-efficacy.

It would not be possible to study reflection as a whole, but only in its differentiated manifestations. The results obtained for the individual taxonomic units of reflection in the study were variable among respondents from the three groups, and this fact provides an optimistic perspective for personalized learning.

Conclusion

It turns out that the reflection of the teacher-respondents on personalized learning is strongly influenced by the knowledge, skills, and practical experience of the three groups of respondents. With all the teacher-respondents, the critical reflection towards personalized learning is very vividly demonstrated, which finds expression in the presentation of one's own pedagogical experience and one's own pedagogical intuition. There is a dynamic from a-reflection to reflection to personalized learning with the A-effectiveness of both respondents and students. "Reflection is a core quality of effective teachers" (Frick et al., 2010). In this context, any study of reflection, even in general, provides facts, concepts, and ideas for the development of innovative methods and models of learning. Teachers' reflection on personalized learning follows the explainable path of any educational reform. At first, there is resistance, followed by gradual acceptance until the innovative reform becomes current and traditional. When teachers' personal reflection on personalized learning is synchronized with teachers' professional reflection, then personalized learning will be the natural educational model.

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School as a Learning Organisation: Impediments to Its Implementation in Latvia and Abroad

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ABSTRACT

One after another, European educational systems are applying reforms to transform primary and secondary schools to fit continuously changing and dynamic environments. Reforms require schools to serve as lifelong learning centres for various learners' groups, including school leaders, teachers and school staff, making them more flexible, collaborative and innovative in what comes to the teaching approaches. Simultaneously, gradual transformations in education are contextualised by the decrease in teaching staff and low motivation to remain in the profession due to a variety of reasons.

'School as a learning organisation' concept is introduced to define a school that continuously changes and adapts to new environments and circumstances through individual and collective learning of its staff. This paper aims to review the main impediments to implementations of the 'school as a learning organisation' concept, considering its functioning in Latvia and abroad. Literature and document analysis was done to assess the characteristics of learning organisations in the European context. With special focus on Latvia, several focus group interviews were conducted with the education managers and stakeholders to verify the implementation impediments in Latvia and define main risks of schools as learning organisations. Content analysis was applied to draw conclusions.

The results have shown that institutional autonomy and leadership are the keys to positive changes in educational staff perceptions and motivation to take on risks and obtain new knowledge, skills and competence for the individual and organisational growth. However, there are other impediments, such as lack of time, financial resources and insufficient communication and understanding of the whole idea of the school as a learning organisation, that stops schools from being the agents of change. The obtained results will be further applied in the design of the 'School as a learning organisation' model and a tool for its measurement in Latvia.

Keywords: autonomy, collaboration, leadership, learning organisation, schools in Latvia, team learning

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Introduction

The concept of the 'learning organisation' was first introduced by Peter Senge (1990) as a result of systems thinking, shared vision, development of mental models, collaborative and individual mastery, which altogether lead to organisational growth. Years later, the concept started to be discussed by the experts in education, focusing on the need to transform educational institutions, including their staff, leaders and external stakeholders, into lifelong learners willing to positively impact students' learning outcomes. Kools and Stoll (2016) have conceptualised a school as a learning organisation (SLO) as the school with the capacity to change and adapt routinely to new environments and circumstances as its members, individually and together, learn their way to realising their goals. It is determined by the combination of 7 action-oriented dimensions, which are currently used by the OECD experts to define schools as learning organisations. These are:

1) a shared vision centred on the learning of all students,
2) continuous learning opportunities for all staff,
3) team learning and collaboration,
4) a culture of enquiry, innovation and exploration,
5) systems for collecting and exchanging knowledge and learning,
6) learning with and from the external environment, and
7) modelling learning leadership. Later, for greater precision, the 8th dimension,
8) partners contributing to the vision of the school, was proposed (Kools etal., 2020).

The theory has been translated into a functional instrument to measure schools' compliance with the concept of a learning organisation.

Despite theoretical conceptualization and wide dissemination of the concept by the OECD experts, practical implementation is not easy. So far only few European countries, such as Greece and Wales (United Kingdom), have researched in detail and reported on SLO implementation internationally (Kools and Stoll, 2016; Papazoglou and Koutouzis, 2020). These experiences are extremely diverse. Even in Wales, which is considered as a flagman of SLO implementation in Europe, schools demonstrate diverse results as 58% of primary and secondary schools managed to work on 5–7 SLO dimensions and only 30% out of these schools worked on all 7 dimensions, but the rest of 42% of schools have to improve their performance according to SLO quality criteria, as almost a third part of schools in Wales was only able to report 1 or 2 SLO dimensions in practice (OECD, 2018). The best results were demonstrated in terms of team learning and collaboration among all school staff, but the weakest point seemed to be the creation of acommon school vision for all learners that is a student-centred learning at its core (OECD, 2018).

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In Latvia, SLO concept is included in the recommendations of the National Centre for Education and is defined by four main elements –

1) vision that promotes learning for every student,
2) culture of inquiry and innovation,
3) teamwork and mutual learning, and
4) management support for development (Skola2030, 2019).

Several large municipalities have already defined SLO as a concept to develop regionally and locally. Although the concept of SLO is not widely known among the school staff across Latvia, characteristics of SLO have been identified by the interviewed representatives of education policy-making institutions. This paper aims to identify the main impediments to the implementation of SLO in Latvia and abroad.

Methodology

Content analysis was carried out by reviewing scientific literature and documents describing schools as learning organisations in theory and practice. The OECD reports and scientific papers composed by Marco Kools and colleagues (Kools and Stoll, 2016; Kools et al., 2020) were analysed as a primary reference to international practice. The theoretical model of schools as learning organisations composed of 7 main dimensions (also called as the Wales' model) was applied for further analysis of organisational learning practices in education applied in Latvia and other European countries. Snowball sampling method for further literature selection and analysis was applied to conclude on the main impediments to 'school as a learning organisation' concept implementation in Europe.

The situation in Latvia was specifically analysed based on 7 focus groups interviews, where discussions with representatives from school management and education boards, municipalities, the State Education Quality Service, the National Centre for Education, the Association of Education Managers, the Ministry of Education and Science and the Employers' Confederation of Latvia took place. Interviews with the total of 30 respondents (groups of 2–7) were carried out by the Professor Inese Lūsēna-Ezera and Associate Professor Gunta Siliņa-Jasjukeviča in the period from August 19, 2022 to August 26, 2022 in the MS Teams platform (online) and took no longer than 2 hours each. Semi-structured interviews were recorded, transcribed and subjected to content analysis. Apart from the topic of impediments to SLO implementation, the questions also focused on general understanding of the SLO concept, it's dimensions and practical examples of implementing SLO practices in Latvia. The main goal of the interview analysis was to identify the most important impediments to SLO implementation nationally. All interviews were conducted in accordance with

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the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Results

Despite gradual educational reforms carried out across Europe and country-specific recommendations of OECD experts on how to support schools in becoming learning organisations (OECD, 2018; Liebowitz et al., 2018; Kools and Stoll, 2016), the understanding of SLO in Europe is generally low at several levels – among policy makers (national and municipal), school leaders, school staff and the larger stakeholder groups. The basic impediment to designing a proper perception of SLO in educational institutions and among the decision makers themselves, is the lack of framework and clear vision on the SLO implementation nationally, as there is no universal formula for SLO implementation across countries. The design of the SLO framework includes participation of a variety of stakeholders to make it functional, data-based and adjusted to specific needs.

Even when the SLO framework is well designed, it needs to reach main stakeholders. Respondents in Latvia particularly highlight the lack of SLO guidelines and proper communication with educational institutions (teachers and school leaders) as a serious risk for SLO implementation. First of all, policy makers and researchers are often operating with complex academic terms that are simply not accessible for non-academic school staff. As pointed out by the representatives of the Employers' Confederation of Latvia, 'it is very important to turn each of their beautiful phrases into very concrete actions'. School staff need brief and practical guidelines answering specific questions of 'what exactly is expected?' and 'how can I accomplish it?'. According to the respondents, the enormous amount of strategic documents and incompatibility of languages makes it difficult to translate abstract terms into specific outcomes, creating confusion. As stated by one of the interviewees in Latvia, 'schools are already tired and extremely overloaded with all new reforms, all novelties, therefore, we have to be very careful about how we build this whole story from their perspective'.

In general, several interviewees have pointed out the constant reforms as a burden for implementing SLO, as dynamic changes hinder mindful developments in previously defined directions. According to one interviewee, 'stability is a need for us to implement the best quality. We will get used to this now and then we will move on.' On the other hand, SLO as a concept itself stands for dynamics.

According to respondents, insufficiency of the municipal and state support for schools, especially in the employment matters, is listed as one of the impediments for SLO implementation in Latvia. The lack of trust and communication among the stakeholders, as well as perceiving them as 'controllers' rather than 'supporters'

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and the ones that share responsibilities for SLO development, hinders fruitful growth of SLOs. The support has to be systemic, responsibilities well defined and coordinated collaboratively in between several institutions: the Ministry of Education and Science, the State Education Quality Service, the National Centre for Education and the State Education Development Agency. More targeted support is a necessity, as stated by the representatives of the National Centre for Education and the Ministry of Education and Science.

Developing a shared vision means creating the basis for a purposeful school development plan that is defined jointly by all staff and stakeholders, so it is not set 'from above'. Research shows that those who have contributed to the creation of a shared vision are better equipped to deal with its implementation and the associated challenges (Schlechty, 2009). However, respondents admit that one of the most challenging dimensions of SLO to implement is creating a shared vision involving all students in the learning process. Special concerns are expressed towards the abilities of school leaders to manage transformations and participation of parties that are supposed to support schools, but do not engage sufficiently. 'The most difficult thing is creating a common vision where other partners are involved. For two years, I have not been able to get the municipality engaged in defining the purpose of the school together with me. How does the municipality see my school's place in the county?'. Moreover, this vision is not complete without the involvement of students (Smyth and Fasoli, 2007) and external stakeholders, such as parents, local community, other educational institutions or companies (Kools and Stoll, 2016).

The requirements towards schools as learning organisations need to provide adequate resources to develop as SLOs. This means developing specific competences of school leaders, teaching and non-teaching staff, providing time for individual learning, collaboration, interaction with education stakeholders and ensuring its financial coverage.

One of the impediments to the SLO development is characterised by insufficiency of skills and competencies which hinder inquiry, innovation, proper use of data, collaboration and team learning, etc. As a 'continuously changing and adapting' structure (Kools and Stoll, 2016), learning organisation requires teachers to be inquisitive and proactive. However, as stated by the respondents, not all educators have enough initiative to learn new things – 'it is easier for them to work with what has been [learn] in the past'. As stressed by multiple respondents in Latvia and SLO researchers from abroad, collaboration and team learning are specifically important, as these support pedagogical competence development, open dialogue, trust and feeling of safety, improve organisational processes, including learning, as well as eliminate fear of failure, which in result might decrease the number of mistakes (Higgins et al., 2012; Kools and Stoll, 2016). What is more, certain skills can be hardly developed in students by the

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teachers not having them. The same applies to school management as school leaders who do not facilitate and participate in learning cannot convince other school staff to do it.

School leadership is one of the main components of ensuring development of SLO (Kools and Stoll, 2016; OECD, 2018) and the role of the leader should not be underestimated. The learning leadership responsibility usually lays on the principal or senior management team; however, as stated by the OECD experts, the concept of leadership is often misunderstood (Liebowitz et al., 2018). For instance, interviewees have recognized that good management of educational institutions is mainly achieved by skilful 'managers', but less often by leaders. Learning leadership, in turn, remains one of the most challenging dimensions of the SLO model'. As stated by the respondent, 'everything depends on the head of the institution, whether they are leaders in their institutions, whether they have this vision, (…) how they engage their team, their organisation and community'. As pointed out by another interviewee, 'A principal must be a strategist. He has to see all sequenced things that need to be evaluated in order to achieve the goal set. And if there is no strategic vision, there will be no followers. And there will be no way at all.'

The lack of skills among school leaders (principals, management teams) is a problem for schools to develop as SLOs. School leaders, who are most often associated with learning leadership, must be able to challenge their own and school staff's thinking, be brave, willing to take risks and strive for positive transformation (Kools and Stoll, 2016; MacBeath, 2013). A learning leader is a person that promotes and reminds about shared goals, challenges, stimulates the development of their own knowledge, leads achievement of goals, as well as learns together with the team of the school staff, instead of coordinating learning processes of others (Leithwood and Reihl, 2003; Kools and Stoll, 2016). As stated by the interviewees, it requires 'strategic vision, great communication skills and being able to demonstrate a personal example of a learner'.

The interviewed education stakeholders agree that the task of the leaders of the schools in is extremely difficult as it requires resistance to stress and strong mental health. As stated by the practitioner, 'a lot of principals experience burnout; we have a lot of vacancies and no one is running to become a school principal'. School leaders are often overburdened with employing teaching staff, taking part in evaluations and fulfilling loads of administrative functions, so there is little room for learning process leadership. According to one of the representatives of local municipalities, '… so that the school's leadership team could start to speak about SLO, basic needs of schools must be met first. Basic needs include having teaching staff, time and no work overload, so the focus can be put on developing a culture of research and innovation (…) it simply cannot be done in the 25th hour of a day!'. Systemic investments are required from the

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leader in both school management and pedagogic practices, which requires being extremely social and engaging in constant interaction with the team.

TALIS research has revealed that about a third (32%) of teachers report lack of support from their employer as a barrier to professional development (OECD, 2014). Therefore, modern educational systems emphasise leadership training, and Latvia is not an exception. Variety of meetings and training sessions are organised for school principals as systemic support actions; however, as respondents point out, a lot depends on personality traits, for instance, openness, empathy, ability to communicate and share. The lack of professional training and experience exchange for school leaders, weak mechanisms of responsibility sharing (e.g. delegation) and insufficient autonomy of schools are a serious burden for SLO development.

The lack of time is among the most common impediments to SLO implementation stressed by the practitioners and experts of SLO. Even if there are highly qualified school leaders, it does not necessarily mean that they have real time to dedicate to leadership functions, that is, to communicate regularly with staff, collect necessary information and learn new things. Similar challenges are experienced by the teaching staff. The teaching staff often lacks time for learning, as apart from lesson preparation, a large number of reports and assessments are to be done on a regular basis, and besides that, tasks associated with communication with parents are often overwhelming (especially based on the experience of pandemic). More than half of the teachers participating in TALIS research report 'that their own schedule conflicts with professional development' (OECD, 2014). In Latvia (similarly as in other countries) there is a serious shortage of teaching staff, as teachers often feel undervalued, exhausted and burned out, as a result, they leave the profession. To ensure purposeful development as a SLO, an atmosphere of trust, communication and paid time for collaborative activities of school staff is necessary, otherwise teaching staff already have a load of individual professional training to implement as a standard professional requirement (Lielvārds, 2021). Another problem is caused by the mobility of teachers as a number of teaching staff in Latvia work in several schools, therefore, regular communication and involvement of all staff is problematic.

In Latvia, more attention should be paid to creation of such a support framework that promotes greater interaction and cooperation between the schools (as opposed to a competition between them). Closer cooperation with other schools can provide the exchange of professional experience, cooperation with parents can lead to greater support for teachers and greater involvement of students, and cooperation with higher educational institutions can increase professional development opportunities for all staff. Universities, for instance, can also benefit from such collaboration, as schools provide an insight into practical challenges to be researched (Kools and Stoll, 2016). For professional schools, collaboration

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with employers is particularly important, as it adds to the knowledge of the teaching staff about the industry and ensures that students are well prepared for working life.

Parental involvement in SLOs has been particularly emphasised by the Association of Education Managers, local education authorities and representatives of municipalities as an essential element of SLO activities. According to them, parents have the opportunity to improve the educational process with their participation, belonging and accountability for students' learning outcomes. What is necessary, according to an interviewee, is 'Understanding and engagement. Participation is a benefit for every institution, but for every pedagogue it would definitely be the support that is received from the colleagues, from the management, from wider collaborative work between educational institutions. This support would benefit everyone.' Without collaboration with a larger audience of stakeholders, the opportunities for innovation development in schools are limited.

Modern schools and education systems all around Europe tend to develop functional systems to gather, store, exchange and process data to be applied in decision making. However, even in the systems where multiple level evaluations of teachers, principals and schools take place, the data is not always properly analysed and applied for improvement. SLO in turn emphasises the importance of data gathering, specifically paying attention to qualitative data that provide in-depth insight into daily challenges for more efficient solution search. It includes processing data on teachers and students, as well as a larger stakeholder pool, such as parents, non-teaching staff, other schools etc. (OECD, 2018). Latvia is one of the countries where multiple evaluations of schools take place; however, data management is still considered as one of the weakest points from the perspective of SLO implementation. In addition, respondents admit that qualitative data (for example, student grades and satisfaction surveys) do not provide sufficient information. In order to engage deeply in the research of SLO implementation, the processing of qualitative data needs to be present at all levels.

What hinders creation of such data management and exchange systems is the lack of time, skilful management, methodologies and tools, inability to involve all staff and ensure proper technological solutions for fast and convenient data management. The lack of the abovementioned hinders effective monitoring and using school data to make informed decisions.

While the funding is not the main determinant of being a SLO, insufficiency of financial resources is a serious impediment to SLO development in all European education systems. The education budget cuts in Greece (Papazoglou and Koutouzis, 2022) and schools' consolidation into school networks in Portugal (Liebowitz et al., 2018), Latvia (OECD, 2020) and other countries demonstrate the constant optimisation efforts and their consequences. Financial resources

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determine the workload of school staff and motivation to engage in extra learning activities, as it allows school leaders to employ a sufficient number of employees to avoid teaching staff's work overload so that teachers can spend more time on inquiry and experimentation. Moreover, finances and their fair distribution allow for increased efficiency of collection, exchange and analysis of data, where modern ICT tools can be applied to support decision making. Obviously, the financial capacity of schools has an impact on the technological equipment of classrooms, and consequently on innovation and creativity in the learning process; therefore, the lack of cooperation with other schools and industry in order to exchange resources and knowledge might be another risk for developing as a SLO.

Discussion

According to Systems Theory, isolation significantly limits the learning opportunities of the parties involved (Portfelt, 2006). The isolation of schools nowadays is associated with limited opportunities to launch creative projects, benefit from funding programmes and cooperate with other stakeholders to observe and adopt practices, and implement social learning. SLO, on the other hand, is positioning schools as highly social structures that understand the benefits of cooperation between teaching and non-teaching staff, local and national authorities, local organisations, businesses, parents, students, researchers and other stakeholders and practices collaborative learning.

There is no universal formula for SLO implementation in different countries. However, the literature emphasises shared leadership and autonomy of schools as important prerequisites for developing as SLOs in accordance with the real needs of stakeholders (OECD, 2018). Autonomy of schools has not been highlighted as a problem in the interviews with education stakeholders in Latvia; however, the OECD experts point out this condition for successful SLO implementation in other countries. Centralization of educational systems, where a large proportion of decisions is taken at ministerial level, are assessed as less efficient and hinder SLO development. For instance, educational systems in Greece or Portugal are gradually moving towards decentralisation of schools, however, hindering factors are the lack of skilful school leaders, easy trackable financial schemes, support of municipalities and other schools and other lacking elements. Similar impediments have been observed in Latvia.

Therefore, effective leadership is emphasised by the experts across the globe. Leadership has a huge impact on school autonomy in practice (Briggs and Wohlstetter, 2003), as it can sustain high quality of education with the collaborative practices and avoid relying on centralised decisions and centrally distributed financial resources as the only resources needed to improve the quality of learning, for both staff and students. However, leadership skills of school

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management and the time and motivation to practise learning leadership activities are one of the main concerns of education stakeholders internationally. To be effective, regular communication between the school leader and staff is essential. The lack of proper leadership hinders development of an inclusive working environment, trust and support between its staff in schools, which is important for promoting common learning, experience sharing, information exchange and collaboration. The research shows that the working environment focused on mutual trust and collaboration positively impacts student learning outcomes, and their engagement and participation in school life (Silins et al., 2002).

Leadership can be developed through acting as a facilitator, coach or mentor, by regularly collaborating with other school leaders, by organising weekly meetings, consultations, networking, conferences, inductions of new teachers, sharing knowledge, experiences and resources, shadowing other school leaders, and networking and collaborating in other ways (Matthews et al., 2011; Somech and Drach-Zahavy, 2007; Kools and Stoll, 2016). Researchers acknowledge that mentoring as a regular practice has a positive impact on the learning process and the cultivation of common values (Kools and Stoll, 2016; Thompson et al., 2004; OECD, 2014). As a task of the learning leader, mentorship requires certain knowledge and mentorship skills, ability to create trustful and supportive atmosphere, as well as time to conduct it regularly. The lack of proper mentorship skills can create additional pressure, hinder self-confidence and readiness to experiment and innovate among school staff. Variety of practices of acquiring and implementing school leadership (including induction periods, setting the physical space, peer learning activities etc.) are demonstrated across the globe and need to be analysed and described to be practically applicable in schools.

Interestingly, the research has revealed an opinion, that smaller schools (referred to rural schools) are considered as having better potential for developing as learning organisations, as they are naturally developed as local community centres with closer interaction and common learning habits of their stakeholders. The research carried out in Greece confirms the assumption about smaller schools (<50 pupils) having better conditions to develop as SLOs, however, there is no valid proof stating that rural schools have better disposition towards SLOs than urban ones (Papazoglou and Koutouzis, 2020). Moreover, the research on SLO in Wales shows that secondary level schools were less successful in developing as learning organisations (OECD, 2018). A similar assumption about professional schools is also shared by the respondents. Further research is necessary to validate these hypotheses in more countries by applying one of the SLO evaluation tools to identify risks and potential solutions to support SLOs.

The limitation of this research on impediments to the development of SLOs in Latvia is that it focuses mainly on the stakeholders not directly involved in the learning process, but rather acting as experts at the national and local

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levels. Bigger picture might be drawn by developing in-depth interviews with the teachers and school principals that are aware of the meaning of the SLO concept. More impediments and risks to SLO implementation, that were not specifically mentioned in the interviews, can be found in the extensive report on 'Developing Schools as Learning Organisations in Wales' (2018) prepared by the OECD.

Conclusions

Four main stakeholder groups involved in the development of SLO were detected during the analysis of data on main impediments to SLO, such as,
1) policy support system,
2) school leadership,
3) organisational learners (school staff), and
4) learning partners, and each of them has its own function and barriers to its implementation.

At the education policy level, SLO is promoted, first of all, by collaboration with researchers, developing the nationally relevant SLO model and communicating it to schools and education stakeholders. At this point, the main risks are related to the translation of theoretical, academic concepts into practical guidelines that can be directly applied to organisational learning at school level.

Another serious impediment to SLO development is the lack of human and financial resources to enable teachers and non-teaching staff to devote more paid time to learning activities. As a large part of the responsibility for autonomous SLO lies on the school leader (principal or management team), it is significant that the school leader is well prepared for this role, has a clear understanding of the concept of SLO, is future-oriented and has appropriate competencies to engage in the learning process, facilitate learning of others, provide support to the staff, involve school staff and other stakeholders in the creation and further implementation of the shared vision for student development. School leader is both the learner and facilitator of team learning within the educational institution.

What hinders development of SLO and partly depends on the capacity of the school leaders are: insufficient support for school staff, including the inability to provide individual mentoring or proper feedback to individual staff members, the lack of trustful and encouraging atmosphere in the school, the lack of a system for collecting and sharing information, the lack of time or mainly administrative role of the 'leader', which generally means the lack of leadership as a potential agent of change. The impediments to the development of SLO are highly dependent on the skills, such as, ability to take risks, experiment, innovate, communicate, collaborate and work out a shared vision, of both school leadership and school staff, as well as the lack of paid time to practice them in an individual and team learning.

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Another aspect hindering organisational learning is detachment of learning from the real work environment, meaning that learning is mainly facilitated outside the school, with others rather than within the school team. However, the presence and involvement of larger stakeholder groups is a part of successful SLO development. Weak networks with parents, other educational institutions, such as schools and higher educational institutions, and even students, is a risk, because isolation of school significantly decreases the access to resources and opportunities for learning.

The situation in Latvia demonstrates similar challenges for SLO implementation. The main impediments stated by the education stakeholders are: the lack of communication between different level policy makers and implementers, inappropriate languages of communication, low shared responsibility in schools and insufficiency of time and financial resources to implement common learning and collaboration. The lack of necessary skills and the actual shortage of teaching staff, are caused by high workload and low financial remuneration, lack of instructional and financial support from school leaders and municipalities, and low prestige of the profession in society.

Aknowledgment

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Implementation of the School as a Learning Organisation: Latvian Educators' Experience

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ABSTRACT

The idea of *the school as a learning organisation* (SLO) has become a topical issue in many countries due to the rapid changes in curricula and the management of educational institutions. The process of purposeful implementation of SLO has started in the Latvian education system too. Within the framework of the project "Competence Approach to Curriculum" (School2030) implemented by the National Centre for Education (Republic of Latvia), not only the current curriculum documents are reviewed and improved, but also the introduction of SLO in general and vocational education in Latvia is realised – a school where each student's deep learning is supported, students, teachers, school management and other staff learn individually and together, a school that is constantly changing and ready to meet the new challenges. SLO is also important for ensuring the assessment and monitoring of the quality of education. Consequently, the issue of SLO is also relevant for the Latvian State Education Quality Service in the accreditation and self-evaluation of educational institutions and the improvement of their principals' professional competence. The aim of the research is to evaluate the mutual coherence and interaction of different levels of policy (education level, municipal level) in the successful implementation of SLO in general education in Latvia. In order to indicate the extent to which the approaches implemented at different levels of educational policy are consistent with the conceptual model of SLO, the theoretical concept of SLO is analysed in the study – key components, operating principles and preconditions for successful school transformation. The study also describes the international experience in the implementation of the SLO model, thus revealing the possible transfer of the experience of other countries to the Latvian educational context.

Keywords: learning organisation, a model of school as a learning organisation, education quality assessment, general and vocational education, education policy in Latvia

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Introduction

In many countries around the world, national governments have launched education reforms aimed at transforming and streamlining school governance. As a result of these reforms, schools are expected to develop inclusive collaborative structures, improve communication channels, organise targeted staff professional development and implement learning-centered leadership (Lo, 2004). Although schools aim to prepare students to live and work in a changing world, schools do not always keep pace with societal changes. This is attributed to the fact that teachers too often do not develop the professional skills and practices that would enable them to support students' diverse learning needs. Therefore, the reforms that are implemented in the education sector are often implemented without continuity, without creating significant and lasting changes in teachers' beliefs and convictions (Fullan, 2015).

The school as a learning organisation is proposed as an alternative strategy to achieve school-wide change, to facilitate the transformation of the school governance model, to influence different aspects of the internal culture of the school organisation and to promote innovation in school governance (Stoll & Kools, 2017). Building schools into effective learning organisations or using their characteristics in school governance is also at the core of several recommendations made by international organisations such as the Organisation for Economic Co-operation and Development (OECD) and the United Nations Educational, Scientific and Cultural Organisation (UNESCO) to national education policy makers (OECD, 2016; UNESCO, 2022).

Since 2016, Latvia has been working on the introduction of a new general education standard, envisaging a gradual transition to a competence-based approach to learning. This change involves not only new learning outcomes for students, but also a new approach to school governance. "A school that supports the learning of every pupil and implements a learning-by-doing approach operates as a learning organisation that changes and adapts independently to new circumstances. It is where pupils, teachers, school leaders and other staff learn individually and collectively to achieve their own and shared goals." (National Centre for Education, 2017) This means that Latvia, too, has set the national education policy goal of gradually transforming schools into effective learning organisations.

The aim of the study is to find out which professional practices characterise schools as learning organisations and how these practices are reflected in documents. In order to achieve this goal, the authors have analysed the scientific literature on the school as a learning organisation, paying particular attention to the dimensions of this model and the prerequisites for its implementation in school management, studied the experience of other countries and regions – Wales (UK) and Singapore – in implementing the principles of the school as

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a learning organisation, and analysed Latvian education policy documents such as the Education Law, Education Development Guidelines 2021–2027, etc, assessing the relevance of the provisions contained therein to the principles of the learning organisation.

School as a learning organisation: literature review

There is no single, all-encompassing definition of a learning organisation in the academic literature, as each definition highlights and emphasises those elements of a learning organisation that are relevant to the context in which the research is being conducted. However, researchers have concluded that what learning organisations have in common is that they need to be created in the context of a rapidly changing external environment, where the learning organisation is seen as a way in which the organisation learns to cope with challenges and solve problems by using the potential of collective learning. A learning organisation is an organisation that has the capacity to change and continuously adapt to new external environmental conditions as its members individually and collectively learn and develop their own unique way of implementing the organisation's vision (Kools & Stoll, 2016).

At the heart of a learning organisation is the learning of all the participants involved, which is acknowledged as the main reason for the organisation's existence. It is an organisation that supports both individual and collective learning and encourages its employees to share with their colleagues their vision of their individual goals and how they relate to the organisation's common goals (Marquardt, 2002). This implies that learning organisations share a number of common elements – strategic leadership and management, a highly developed internal organisational culture, effective communication systems, information and knowledge sharing systems, and multiple levels of learning (Birdthistle, 2009).

A learning organisation is characterised by the ability to create, acquire, interpret, transfer and retain knowledge, and to purposefully redesign its activities to reflect new knowledge and insights gained through the learning process. Moreover, it is important that the collective knowledge acquired during the organisation's activities is retained in the organisation's memory and reflected in the activities, norms and procedures implemented by the organisation (Garvin, 2000).

The development of a learning organisation is determined by 4 interrelated elements: organisational learning, learning at work, the learning climate and the learning structure of the organisation. Organisational learning focuses on different levels of learning, the creation and accumulation of knowledge and its use in the organisation. Workplace learning means that employees have the opportunity to learn on site in the organisation because knowledge is contextual (Marsick & Watkins, 1990, 2020). A learning climate implies that the management of the

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organisation creates a positive atmosphere in the workplace that is supportive, open and helps to develop new and critical thinking patterns in employees. A learning structure requires that the organisation develops a management that is flexible and decentralised and encourages the formation of teams of employees (Örtenblad, 2004).

Dimensions of the learning organisation

Senge (1990) proposes 5 dimensions of a learning organisation:
1) personal mastery, in which the members of the organisation create their personal vision, care for their professional development and use their knowledge for the benefit of the organisation;
2) mental models, which involve an ongoing dialogue between employees that allows them to evaluate existing and develop new values, opinions and beliefs;
3) shared vision, which is created through collective agreement and is understood and accepted by all employees;
4) team learning, which is characterised by thinking collectively and learning from each other's past experiences;
5) systems thinking, which is related to understanding the processes within and outside the organisation and their impact on the organisation's performance.

In the context of implementing the principles of learning organisations in schools, researchers propose the concept of a "learning school". This is a school in which learning is central, and everyone learns – students, teachers and school management (Ng, 2005b). A learning school is a school that is transformed and made sustainable not through edicts, rules or instructions, but through an explicit orientation towards learning. All school-related actors are encouraged to express their vision of the direction of the school's development and contribute to the realisation of this vision (Senge et al., 2000).

Johnston & Caldwell (2001) point out that the school as a learning organisation is characterised by 4 dimensions:
1) effective communication channels between stakeholders;
2) inclusive collaborative structures within the school, and between the school and the local community;
3) integrated and inclusive professional development for staff; and
4) learning-focused leadership. The school as a learning organisation is characterised by a climate of trust and collaboration within the school; the capacity and willingness of staff to take initiative and risks; a shared and monitored school mission and professional development of staff (Silins et al., 2002).

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Referring to the ideas of Peter Senge, Lo (2004) points out that a school as a learning organisation is characterised by:

1) personal mastery, which is linked to staff understanding of their personal goals, critical evaluation of current practices and purposeful professional development;
2) mental models, characterised by staff openness to change, willingness to experiment and regular reflection;
3) shared vision, involving a wide range of people in the formulation of the school's mission and goals;
4) team learning, which involves building such systems that foster collaboration among staff, harnessing the potential of informal learning;
5) systems thinking, characterised by the use of multiple communication channels, sharing decision-making and responsibility among school staff and understanding the changes taking place in the broader educational context.

The school as a learning organisation is characterised by continuous learning opportunities, exploration of professional practice and dialogue, collaboration and team learning, systems for knowledge accumulation and dissemination, encouragement to pursue a collective vision, alignment of action with the collective vision, strategic leadership with a focus on learning and alignment of action with the external environment (Marsick & Watkins, 2003).

Whereas OECD researchers in the context of the school as a learning organisation propose a 7-dimension model:

1) a shared vision of learning for all students;
2) creating and providing continuous learning opportunities for all staff;
3) fostering team learning and collaboration among staff;
4) culture of inquiry, innovation and exploration within the school;
5) systems for acquiring, storing and sharing new knowledge within the school;
6) learning from the external environment and other systems;
7) modelling and growth of learning management (OECD, 2016; Stoll & Kools, 2017; Kools et al., 2020).

Prerequisites for developing a school into a learning organisation

To develop a school as a learning organisation, it is necessary to achieve the formation of such internal culture of the organisation, that is based on trust among employees (Stoll & Kools, 2017). In schools characterised by high levels of trust, teachers can talk more openly about the challenges they face in their daily work and learn more effectively from mistakes (Vaessen, van den Beemt & de Laat, 2014). It involves a shift in mindset and a commitment by all school staff

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to self-reflect and evaluate their professional performance. Without collective commitment, collaboration and risk-taking, it is not possible to establish a school as an authentic learning organisation (Harris & Jones, 2018).

The microclimate of relationships in the school and the dynamics of teachers' interpersonal relationships are important for the implementation of the principles of a learning organisation (Carney, 2000). It will be possible to implement the principles of the learning organisation if school staff are open to new experiences, willing to support other colleagues in their change efforts, and willing to share the knowledge and good practice accumulated in the school. It is also important to develop the skills of providing and using reflection and feedback of all parties involved (Kelchterman, 2004; Timperley et al., 2008).

The implementation of the learning organisation model in schools is linked to a change in the role of school leaders. Despite the fact that learning leadership is often shared in schools, employees are not always able to take responsibility and change the way processes are implemented unless they are supported by the school leadership. Consequently, the leadership team has a responsibility to provide a safe environment in which people can develop new behaviours and be aware that they are not expected to maintain the status quo, but to challenge established practices (Marsick & Watkins, 1999).

Another prerequisite for the implementation of a school as a learning organisation is how well the school administration implements a policy of shared leadership and responsibility in the school and how teachers are involved in issues related to school governance (Harris & Jones, 2010). The participation of school employees in the decision-making processes can increase the responsibility of teachers and other stakeholders for the achievement of organisational goals (Thoonen et al., 2011).

Research methodology

The qualitative data and information required for the study were obtained using the monographic method, by identifying, selecting and systematically analysing professional and scientific literature in English in the international databases such as EBSCO, Taylor & Francis, EMERALD, WEB of Science, etc. The aim of the literature analysis is to answer 2 research questions:

1) What is "school as a learning organisation" and what are the dimensions of this concept?
2) What are the international examples of national or regional transformation of schools into learning organisations and what can other countries learn from this experience?

To analyse the international experience of implementing the "School as a learning organisation" model, 2 examples are examined – Singapore and

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Wales (UK). Singapore has been selected for the case study analysis because its education system has been ranked as one of the best in the world according to the OECD's 2018 PISA survey, with students demonstrating high academic achievement in mathematics, science and literacy (OECD, 2019). This has been attributed as one of the outcomes of the nationwide 'School Excellence Model', which has transformed schools into learning organisations (Ng, 2003). In contrast, Wales (UK) is selected for the case study because, according to the OECD's PISA 2009 survey, Welsh pupils have shown mediocre learning outcomes in mathematics, science and literacy (OECD, 2018). As a result, an education reform "Education in Wales: Our national mission, Action plan 2017–2021" (Welsh Government, 2017), was launched and implemented in Wales with the aim of transforming schools into effective learning organisations.

The authors have conducted a qualitative content analysis of Latvian education policy documents in order to answer the research question on how the principles of school as a learning organisation are reflected in the framework of the documents of the Latvian education system and what is their mutual coherence in the context of the implementation of the "School as a Learning Organisation" model. The 7 dimensions of the OECD's School as a Learning Organisation model have been selected as the research categories for the analysis of the documents (OECD, 2016; Stoll & Kools, 2017; Kools et al., 2020). This model has been selected because the relevance of it has been scientifically proven in practice in Wales (UK), Singapore and other countries and regions.

The following Latvian education policy documents have been analysed as part of the qualitative content analysis:

1) National Development Plan 2021–2027 (2020);
2) The Law on Education (1998);
3) Education Development Guidelines 2021–2027 (2021);
4) The Standard of the Teaching Profession (2020);
5) Guidelines for Quality Assurance in General and Vocational Education and their annexes (2022);
6) Recommendations of the National Centre for Education project "Competence Approach in Curriculum" (National Centre for Education, 2021).

Research results

Singapore's experience in implementing the "School as a Learning Organisation" model

According to the OECD's implemented research "Programme for International Student Assessment" (PISA) in 2018, Singapore's education system is considered one of the best in the world, with students demonstrating high learning achievements in areas such as mathematics, science and literacy (OECD, 2019).

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This performance has been attributed to long-term education policy reforms that have aimed to integrate the teaching of 21st century skills into the curriculum, cultivate a culture of lifelong learning, foster students' innovative, creative and critical thinking skills, broaden their learning experiences and prepare civically active learners for life in the global world (Gopinathan & Lee, 2018).

Singapore's education system is based on decentralised decision-making, which is a delegation of responsibility from the central government to the local school level and an agreement on decision-making between the school principal, teachers, parents, local community and students at the school level (Levacic, 1998; Raab, 2000). Within this paradigm, school leaders, teachers, students and parents are delegated greater freedom and autonomy in making decisions related to the use of school budget, personnel management and curriculum design to promote a learning environment that is appropriate for all students (Ng & Chan, 2008).

In 2000, in all schools in Singapore, the implementation of "The School Excellence Model" was launched, under which schools were guided to develop towards excellence through increasing their autonomy, strengthening the leadership and management skills of school principals, promoting educational innovation in schools, and increasing parental and community involvement in educational processes (Goh & Richards, 1997). This model emphasises the role of school leadership and teachers in promoting students' academic achievement, and according to it, excellence in education is defined as holistic education that ensures sustained academic outcomes rather than one-off events (Ng, 2017).

The School Excellence Model includes 9 quality criteria or dimensions:

1) leadership: what management systems are implemented in the school to promote student learning and excellence in academic achievement and to meet the school's responsibilities to society;

2) strategic planning: how the school sets relevant development goals for its stakeholders, develops an action plan and monitors progress in achieving these goals;

3) staff management: how the school develops and uses the potential of its staff to become an outstanding school;

4) resources: how the school manages its internal and external human resources to achieve its goals;

5) student-centred process: how the school designs, implements, manages and improves processes to ensure holistic education and student well-being;

6) administrative and operational outcomes: how the school achieves operational efficiency and provides a meaningful education for its students;

7) staff outcomes: how the school contributes to staff professional development and job satisfaction;

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8) partnership and community outcomes: how the school works with partners and the wider local community;

9) key performance outcomes: how the school ensures the holistic development of students and the set educational goals (Ng, 2003).

A study published in 2019 concludes that decentralisation in Singapore's education system has encouraged flexibility and innovation in schools, while retaining government oversight has ensured that schools are held accountable for improving learning outcomes for all students. Factors such as the measures taken in schools to support the growth of every student, the professional development of teachers, and the extracurricular activities offered to students have contributed to the implementation of Singapore's "School Excellence Model" (Huang et al., 2019).

In the context of the implementation of the School Excellence Model, it is concluded that Singapore's education system is characterised by sound human resource management policies, coherence between action policies at different levels of the education system and a culturally embedded respect for the teacher as a leader. These are factors that play a pivotal role in building a sustainable, coherent and high-performing education system. Similarly, innovation and entrepreneurship have been given a significant place in Singapore's education system and are defined as a mandatory strategic focus for every school (Ng, 2005a).

Despite the positive changes brought about by the implementation of Singapore's "School Excellence Model", Singapore's education policy has been criticised for its strong focus on students' academic achievement. While Singaporean students perform very well in international studies, these achievements are often achieved through traditional teaching and learning methods. This is due to the fact that society in Singapore is still focused on examinations, which are used to select students for the later stages of education. As a result, the education system has become a source of socio-economic inequality (Gopinathan & Lee, 2018).

The experience of Wales (UK) in implementing the "School as a Learning Organisation" model

According to data obtained from the implemented study by the OECD, Programme for International Student Assessment (PISA) in 2009, Welsh pupils were performing mediocrely, which led to the launch of a reform project in 2011 with the aim of reorganising the education system and implementing quality and inclusive education that meets the requirements of the 21st century (OECD, 2018). The reforms were based on an action plan, "Education in Wales: Our national mission 2017-21", which aimed to achieve 4 education goals between 2017 and 2021, helping to create:

1) purposeful and skilled learners who are ready for lifelong learning;

2) enterprising, creative people who are ready to engage fully in life and work;

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3) ethical and informed citizens of the Welsh region and the world;
4) healthy and confident individuals who are ready to lead fulfilling lives in contemporary society (Donaldson, 2015, p. 29).

In parallel with the development of the policy documents, it was agreed between policy decision makers and schools that the successful implementation of the Action Plan requires the continuous collaboration and development of teachers, support staff, school management and all stakeholders, thus contributing to the development of a culture of learning in every school. Following the example of other countries, such as Norway, the Netherlands and Singapore, the Welsh education system defined a common goal: to transform all schools into effective learning organisations. To achieve this goal, in cooperation with the OECD, a 7-dimension model of a learning organisation was developed (Kools & Stoll, 2016; OECD, 2018; Kools et al., 2019).

To assess the impact of the changes, OECD researchers conducted interviews with school staff, education policy makers and other stakeholders in the Wales region; researched education planning documents; and developed a 69-question survey to assess a school as a learning organisation (Kools et al., 2020). In 2018, an OECD report was published which concluded that the majority of schools in Wales are on their way to implementing the school as a learning organisation model, as 58% of schools have worked with 5–7 dimensions of the learning organisation and 30% out of these schools have worked with all 7 dimensions, however, 42% of schools need to improve their implementation of the principles of the learning organisation (OECD, 2018).

OECD research data show that schools do best when it comes to team learning and fostering collaboration among staff and building systems for collecting and exchanging knowledge, while the biggest challenges are building a shared vision of learning for all students, creating a culture of inquiry, exploration and innovation, and collaborating and learning from the external environment and other systems (OECD, 2018). Although Wales is in the process of implementing education reforms that will last until September 2022, the Welsh Government already acknowledges that additional investment and contributions will be necessary for school staff to broaden their skills and vision on how school as a learning organisation functions (OECD, 2018).

Latvian experience in implementing the "School as a Learning Organisation" model

Dimension "A shared vision of learning for all students". Latvian policy documents consider the vision of education in the context of the achievable outcomes in other fields of economic activity. For example, in the National Development Plan 2021-2027 (hereafter: NDP) and the Guidelines for the Development of Education 2021-2027 (hereafter: GDE), the vision of education

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is viewed in the context of the country's economic growth, development of civil society and the issues of cultural sustainability (National Development Plan, 2020; Education Development Guidlines, 2021). However, it is not stated that every school in Latvia should develop a clear vision for student learning in the context of nationally defined education policy priorities.

Whereas the Guidelines for Quality Assurance in General and Vocational Education (hereafter referred to as the Education Quality Guidelines) state that every educational institution should have a mission, vision and values, which are defined through the involvement of all target groups, such as students, teachers, parents, etc. (Guidelines for Quality Assurance in General and Vocational Education, 2022). A similar concept is also found in the recommendations of the National Centre for Education (NCE) project "Competence Approach in Curriculum" (hereafter: NCE recommendations), which calls on every school to define and put into practice a school vision that promotes and enhances learning for every student and in which all stakeholders are involved (National Centre for Education, 2021).

The above-mentioned evidence suggests that the dimension "A shared vision of learning for all students" of the "School as a learning organisation" model is integrated in Latvian policy documents, but its reflection is not consistent and coherent. For example, Education Policy Framework documents such as the NDP and GDE refer to the vision of learning not in the context of schools as individual organisations, but in a broader context. In contrast, the Education Quality Guidelines and the NCE recommendations refer specifically to the need for schools to develop a particular vision to support the learning of all learners.

Dimension "Creating and providing continuous learning opportunities for all employees". The Law on Education of the Republic of Latvia defines the local municipality as the implementer of teachers' professional development, which is also the founder of the school (The Law on Education, 1998). This means that there is also a requirement at the local level to plan and organise teacher professional development in line with the goals set by the education policy. The NDP and GDE also include a requirement for teachers to undertake continuous professional development to support students' learning (National Development Plan, 2020; Education Development Guidelines, 2021). However, these documents refer specifically to teachers' learning, without including other school staff such as support staff and technical staff, even though the 'School as a Learning Organisation' model emphasises professional development of all employees.

The Standard of the Teaching Profession states that, in order to perform professional duties, teachers need to be skilled to regularly evaluate their own performance and to plan and implement professional development to support pupils' learning and development. Teachers are also expected to apply the latest pedagogical knowledge and innovations in their practice, which can be acquired

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through continuous professional development (The Standard of the Teaching Profession, 2020). On the other hand, the Education Quality Guidelines emphasise that it is the responsibility of the school principal to provide learning opportunities for teachers, implemented both through formal learning (attending lectures, seminars, workshops, etc.) and informal professional development (teacher collaboration groups, networking with other organisations, etc.) (Guidelines for Quality Assurance in General and Vocational Education, 2022).

Therefore, it can be concluded that the dimension "Creating and providing continuous learning opportunities for all employees" of the model "School as a learning organisation" is included in the reviewed Latvian education policy documents. However, the related normative framework emphasises only the role of teachers and school management in planning and implementing professional development, without mentioning other staff whose actions and professional performance may have an impact on pupils' learning and well-being at school.

Dimension "Fostering team learning and cooperation among employees". The Education Quality Guidelines indicate that schools need cooperation between teachers, jointly planning and evaluating student learning, so that teachers have the opportunity to learn from each other's experiences. The policy document also emphasizes the importance of collaboration between the head teacher, teachers, support staff and pupils in ensuring the quality of education, innovation and the well-being of everyone involved in the education process (Guidelines for Quality Assurance in General and Vocational Education, 2022). This leads to the conclusion that team learning and collaboration is extended to a wider range of actors than the dimension discussed above, which focuses on the learning of teachers rather than all staff.

The Standard of the Teaching Profession states that teachers are obliged to evaluate their professional competence in cooperation with other colleagues, share experience and provide feedback to improve performance (The Standard of the Teaching Profession, 2020). This means that the need for informal learning to build a collaborative school internal organisational culture is emphasised, which is a prerequisite for building a learning organisation. Whereas the NCE recommendations indicate that teachers need to cooperate in order to monitor and follow the progress of all students in the learning process and ensure better learning opportunities, which is possible to implement if teachers regularly and purposefully cooperate and learn together. It also emphasises that collaboration is a way for teachers to improve their professional performance by learning from each other and from examples of good practice within the organisation (National Centre for Education, 2021).

The above-mentioned results lead to the conclusion that the dimension "Fostering team learning and cooperation among employees" of the "School as a learning organisation" model is included in the reviewed Latvian education

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policy documents. Furthermore, it can be concluded that the understanding of why teacher collaboration and shared learning is necessary is similar across them, that is, it is a way for teachers to improve their professional performance and more successfully support the learning of every student.

Dimension "A culture of inquiry, exploration and innovation at school". In the Standard of the Teaching Profession, although the use of the term "innovation" does not appear directly, it is emphasised that the teachers are professionals who explore and study the learning needs of their students. Therefore, the teacher is expected to carry out research activities that allow the learning process to be adapted to students with different learning needs (The Standard of the Teaching Profession, 2020). The GDE, on the other hand, contains an indication that it is important for teachers to experiment in order to improve the quality of education at school (Education Development Guidelines, 2021), but similar references are not found in other Latvian education policy documents.

The Education Quality Guidelines state that it is important for teachers to use the knowledge and skills acquired through professional development activities, thus implementing innovations in their performance. It is also important for teachers to use the results and findings of current research in the field of education and to use information communication technologies to enhance student learning. Whereas at the school level, it is discussed that schools need to gather a variety of data in order to conclude what changes should be made and how to implement them in the organisation (Guidelines for Quality Assurance in General and Vocational Education, 2022).

Therefore, it can be concluded that the dimension "A culture of inquiry, exploration and innovation at school" of the "School as a learning organisation" model is indirectly integrated into the Latvian policy documents, as some of its elements, such as the study of professional practice and the collection of diverse data, are mentioned in them. However, the policy documents currently lack a direct indication on which innovations and in what way teachers should implement in their daily practice, therefore, the implementation of innovations is left entirely to the schools and not regulated at the national level.

Dimension "Systems for collecting and exchanging knowledge and learning". All of the reviewed Latvian education policy documents describe in detail what data a school needs to collect in order to define development goals and priorities, and to set qualitative and quantitative outcomes for ensuring the quality of education. They also specify what data collection methods should be used to enable teachers and the school to self-evaluate their performance, for example, questionnaires, lesson observations, focus group discussions, document analysis, etc. The Education Quality Guidelines state that education quality monitoring is carried out by the educational institution and its head, the municipality as the school founder and the National Service for Quality in Education (Guidelines for

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Quality Assurance in General and Vocational Education, 2022). This means that the quality of education offered at a school is determined by diagnosing and evaluating both the performance of the individual pupil and the professional activities of the teacher, as well as the professional activities of the school head.

In turn, the NCE recommendations indicate that the task of the school staff is to introduce innovations in their work, perceiving problems and mistakes as a learning opportunity, and to involve students in researching and learning about the school as an organisation, thus creating a common understanding of the meaning and essence of change in the school. Schools are also expected to monitor and evaluate the quality of the education offered in the school, defining measurable outcomes and self-assessing their progress in relation to the goals set (National Centre for Education, 2021).

The above mentioned findings suggest that the dimension "Systems for collecting and exchanging knowledge and learning" of the "School as a learning organisation" model is included in the Latvian policy documents, but it is too general. For example, the policy documents specify which data collection methods a school should use to evaluate its performance and plan the changes to be made, but do not explicitly indicate how the obtained data should be analysed in order to draw conclusions about the need for a change in the organisation.

Dimension "Learning with and from the external environment and larger systems". In the Latvian policy documents examined in the framework of the study, learning from the external environment is understood as the school's cooperation with various partners, such as businesses, local government, professional communities and higher education institutions, with the aim of improving the quality of education. The Standard of the Teaching Profession states that the teacher's task is to organise a learning process in which pupils have the opportunity to act in real-life situations (The Standard of the Teaching Profession, 2020). However, this is attributed to student learning, not teacher learning, narrowing the understanding of teacher professional development as taking place in the school environment rather than outside it, learning from the experience of other organisations.

The Education Quality Guidelines state that it is the school principal's responsibility to encourage and organise cooperation with the local community and businesses to learn from their experiences. "The [school] head ... initiates cooperation with other institutions to ensure high quality learning achievements and the qualitative implementation of educational programmes." (Guidelines for Quality Assurance in General and Vocational Education, 2022). This means that the principal has a responsibility to build purposeful cooperation networks with other organisations, and as a result of this cooperation to improve both the school's governance model and the quality of teaching, as well as broaden the learning experience of students and teachers.

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Therefore, it can be concluded that the dimension "Learning with and from the external environment and larger systems" of the "School as a learning organisation" model is included in Latvian education policy documents. However, its elements as a specific field of professional activities of a school are described in more detail in documents that have a recommendatory character, such as NCE recommendations, rather than in the Law on Education (Law on Education, 1998), where the norms are mandatory for schools to comply with. This means that learning from the external environment and larger systems in the Latvian case is more associated with desirable and encouraged behaviour, but it is not seen as a mandatory prerequisite for improving school's performance and transforming it into a learning organisation.

Dimension "Modelling and growing learning leadership". The Standard of the Teaching Profession states that teachers are active participants in the school governance, proposing their own ideas and solutions to problems (The Standard of the Teaching Profession, 2020). This means that a teacher is a professional who takes the lead in initiating the necessary changes and improvements in an organisation to promote student learning. In contrast, the NCE recommendations regarding the modelling of learning management refer to self-regulated learning, which is attributed to the learning of students rather than teachers and other school staff (National Centre for Education, 2021).

The Education Quality Guidelines include the indication that the school principal "leads mutual learning and teamwork, which enables the opportunity to collect, accumulate and publicise knowledge creation and learning experiences, provides the support functions of the methodological centre for other educational institutions" (Guidelines for Quality Assurance in General and Vocational Education, 2022). This means that the school principal, in a school as a learning organisation, not only takes responsibility for managing the administrative and economic processes, but also provides methodological support to teachers. In this way, the understanding of the role of the school principal is significantly expanded, with a focus on their own learning and that of other professionals. "The head of the school knows how to provide professional and growth-oriented feedback to his employees" (Guidelines for Quality Assurance in General and Vocational Education, 2022), thereby demonstrating the ability to manage learning.

This means that the dimension "Modelling and growing of learning leadership" of the "School as a Learning Organisation" model can be found in Latvian education policy documents. However, it is primarily understood as the leadership implemented by students in organising self-regulated learning, and the role of the school leaders in guiding their own and other staff members' learning. As for teachers, the focus is on their involvement in solving school-level challenges and proposing ideas, with less emphasis on the teachers as professionals

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who purposefully guide not only their students' learning, but also their learning, which means defining their individual learning needs and demonstrating an example of lifelong learning.

Conclusions

All 7 dimensions of the "School as a learning organisation" model can be found in the Latvian educational policy documents, which shows that in the case of Latvia, similarly to the foreign examples discussed in the study, there is a gradual progress towards the transformation of schools into learning organisations. However, the planning of Latvia's education policy in the context of the learning organisation does not take place in a single, unified system, as there is no direct consistency and coherence between the different policy documents. This refers both to the interpretation of the concepts used in the policy documents and to the priorities set for the implementation of changes in school governance and ensuring the quality of education. Therefore, it would be recommended to harmonise the norms contained in policy documents and agree on a collective understanding of what is meant by a learning organisation and its functioning dimensions in the Latvian context.

The authors' analysis of Latvian education policy documents shows that there are elements of the "School as a learning organisation" model that are included and explained in a broad and comprehensive way, such as teacher professional development and team learning and cooperation. This could be explained by the fact that the implementation of these dimensions has been a priority of education policy for a long time and is equally applied to both teacher and student learning. Therefore, professional practices included in these dimensions are easier to understand and teachers have personal experience of participating in the implementation of these dimensions.

However, there are also dimensions of the "School as a learning organisation" model that are only superficially addressed in Latvian education policy documents or are only included in a few policy documents, such as modelling and growing learning leadership and a culture of inquiry, exploration and innovation in schools. This could be explained by the fact that the understanding of these dimensions is related to professional practices that have been less frequently implemented in Latvian schools, and more education of educational staff and society is required in order to realise the importance of these dimensions in improving the quality of education.

Moreover, the concepts used in these dimensions, such as "innovation", provide wide interpretation possibilities, which prevents the possibility of reaching a consensus on how their implementation could look like in the practice of Latvian schools. Therefore, it would be recommendable to develop a model of

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a learning organisation that would be tailored specifically to the Latvian education context, reaching as much consensus as possible on the importance of each dimension for improving the quality of education and the practical manifestations of teachers, students, parents and other stakeholders.

Aknowledgment

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Teachers' Beliefs about Teaching and Learning: Why is It Still a Challenge?

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ABSTRACT

Teachers' beliefs influence their classroom activities and students' involvement in learning more than knowledge or curriculum, beliefs can slow down the implementation of educational reforms, the introduction of new practices, or support it. Exploring beliefs is difficult, teachers may not be open in expressing existing beliefs, or they may be unsure of their own beliefs, replacing them with slogans that are socially acceptable narratives. The purpose of this study is to identify teachers' beliefs that characterize student teaching, additionally evaluating how these beliefs affect teacher agency. The answers to these questions were obtained by implementing a case analysis – studying the narrative identity of all mathematics teachers of one school, while the research process is like ethnographic research, data is obtained by interviewing respondents and observing them in practical work. The belief identified as a result of the research is that the teacher's main task is to prepare students for sufficiently high results in the mathematics exam, describing how the identity of a "good teacher" is formed, which brings with it agency – an active contribution to make it happen. The second identified belief – some students cannot study in the classroom together with the others, this demonstrates the absence of teacher agency, teachers' responsibility for children whose learning is a challenge, these children are handed over to other agents – parents and private tutors.

Keywords: agency, beliefs, identity, school, teachers

Introduction

Belief system is like a filter that influences teachers' decision-making more than pedagogical knowledge or curricula (Clark & Peterson, 1986). However, identifying beliefs and evaluating their impact on teaching and learning is a difficult task. Beliefs are in a kind of *grey area* – we don't have a common practice

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of talking about beliefs, teachers talk about the program, methods, challenges, claims, but not about the beliefs behind it all.

In the cognition process of beliefs it is not easy to decide whether what the teacher said is a socially desirable answer or a true description of the situation and one's own disposition. Despite these obstacles, we will show how to find out teachers' beliefs, thereby understanding the individual and collective discourse that affects teachers' perceptions, judgements and decisions by directing future actions.

To implement this, we will use the concepts of narrative identity and agency, which will allow us to understand existing beliefs through teachers' stories about themselves and others, analyzing how they affect the set of teachers' actions and active participation in teaching different students.

The research of beliefs is especially important in the context of the curriculum reform that is currently being implemented in our country. It is the belief system that can become a serious obstacle to implementing changes in education (Šmeļkova, 2013). On the other hand, by finding out and critically reflecting on their identity as a teacher, it is possible to promote both changes in beliefs and teacher agency.

Teacher's beliefs as a complex phenomena

Teacher's beliefs are visible in the teacher's actions and setting, they influence the decisions made and the implemented actions – instructional decisions, classroom climate (Hill et al., 2019, Chong et al., 2010), acceptance of diversity (Kiely et al., 2015), motivation to cooperate with other teachers (Kolleck, 2019; Drossel et al., 2018), while teachers' self-efficacy beliefs influence resilience (Yada et al., 2021) and can reduce the risk of burnout (Skaalvik and Skaalvik, 2007).

The research of teachers' beliefs has grown significantly in the last 20 years (Ashton, 2015), focusing research mainly in three directions – the biographical and historical origins of beliefs, development, evolution, and change in beliefs over time and in context, and connections between teachers' beliefs and classroom practice (Bullough, 2015: p.165).

The influence of experience and biography on the formation of beliefs is looked at by describing the experiences gained at school and in the family, which further influence the teacher's beliefs. For example, mathematics teachers' beliefs about themselves as teachers of mathematics are often related to their past experiences as students who have learned mathematics – relationships with mathematics teachers/parents' relationships with mathematics (John, 2022). Beliefs are formed by accumulating experience, and a teacher who has formed beliefs about himself as an effective professional does not change these beliefs so easily (Rezaeian & Abdollahzadeh, 2020; Wolters & Daugherty, 2007, Klassen &

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Chiu, 2010) Several authors point out that changing beliefs is complex, an intense and long-term process, and some studies even raise doubts about the feasibility of this direction because there is no certainty that this type of change will lead to better outcomes (Ashton, 2015; Fives & Gill, 2015), while others point out that it is possible to overcome or change the influence of the past (Bosica, 2022) by using a reflexive analysis of one's own beliefs (Grootenboer, 2008)

The broad research trend also determines the differences in the definitions of beliefs. Many authors emphasize the role of emotions in the formation and maintenance of beliefs.

Other authors emphasize the relationship between beliefs and practices. For example, – Beliefs are the driving force of human goals, emotions, decisions, and actions (Bandura, 1997). Beliefs are lenses which affect the view of the world and the disposition that directs action (Philipp, 2007, quoted by Goldin et al., 2016). The dialectical relationship between the beliefs and practice are significant because they allow us to identify what the teacher does, not what he/she says (Goldin et al., 2016). Teachers' beliefs allow us to understand what constitutes good teaching in a specific place, distinguishing two possible directions – whether it is focused on students and knowledge construction, or the teacher who implements the transfer of knowledge to students (Fives et al., 2015).

Looking at it this way, it can be said that beliefs affect the possibilities of implementing educational reforms because if teachers are convinced of the transfer of knowledge to students as the most effective teaching, the implementation of the constructivist approach requires significant changes in beliefs.

Another way of defining beliefs is related to the context in which they are formed and from which they are inseparable (Tschannen-Moran et al. 2015; Biesta et al., 2015; Fives et al., 2015). The impact of the context can be viewed more broadly – teachers' beliefs can be considered part of the culture that is formed – both at the school and at the level of the district, state and its policies, it contributes to the implementation of the established curricula (Fives & Buehl, 2012). Or more narrowly – the teacher's beliefs are situational – context dependent and subject specific – so it changes in different situations (Tschannen-Moran & Hoy, 2007; Dellinger et al., 2008), and there are no general teacher's beliefs, the teacher's beliefs are about specific topics or constructs; and they are important in certain circumstances/context (for example, beliefs about teaching, assessment, specific academic field, etc.) (Pajares, 1992).

By studying beliefs, it is possible to see contradictions that may exist between the individual beliefs and values of the teacher and the wider institutional discourse and culture (Biesta et al., 2015) therefore the teacher's beliefs can be described as a characteristic of the individual and collective discourse which further affects the teachers' perception, judgments, decision-making, motivating and guiding the teacher's actions (Biesta et al., 2015). In this way, the influence

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of the individual and the wider context on the established habitual actions or practices are combined, pointing out that beliefs allow us to identify the direction of the action by explaining its reasons.

Identity for the cognition of beliefs

Beliefs like attitudes, values are difficult to study, so it is necessary to find a way to do it in a research-correct manner, and this can be done with the study of identity without pretending in this way to an in-depth study of human behavior (Sfard & Prusak, 2005). Identity is like an analytical lens for educational research (Gee, 2000, it allows to understand the interaction of individual and collective influence (Holland et al., 1998; Aoyama, 2021) explaining how a person learns (Sfard & Prusak, 2005; Lave & Wenger, 1991). Identity is created and transformed by people in a constant process of interaction, contrary to personality and character, which is biologically determined (Sfard & Prusak, 2005), it "creates new activities, new words, find new ways of being (Holland et al., 1998, p. 5), also allowing to see "personal and collective responsibilities for individual lives." (Sfard & Prusak, 2005, p.15)

Next, let's look at different characteristics of identity, choosing the most suitable one for the cognition of teacher's beliefs.

Gee defines identity as "a kind of person, in a given context" (Gee, 2000, p. 99). He describes four perspectives on how to look at identity, pointing out that one of them was in the foreground in historical development. Nature identity was formed as a result of genes or early social experiences, determining human behavior; institutional identity is formed under the influence of the norms, traditions, and principles established in the institution; it can be imposed or it can be as a professional calling. Discourse identity is formed through discourse and dialogue, recognizing and owning this identity in the institution. Affinity identity describes belonging to a group with common interests expressed as participation in common practices.

Menon (2020) combines two constructs in one model, pointing out that the sources of beliefs forming self-efficacy – mastery experiences, vicarious experiences, verbal persuasion, physiological and affective states (after Bandura, 1997) contribute to the formation of the various dimensions of identity, as described by Gee. For example, mastery experience, which can be seen in discourse with classroom stunts, success with engaging students, hands on investigations, etc., creates discourse identity and affinity identity (p. 476). Such an approach can be called an attempt to explain the ways of identity emergence, but this approach does not answer the question – what beliefs exist in the community and why they have formed.

Another approach in defining identity is related to the communities of practice in which a person learns. Thus, Lave and Wenger (1991) believe that identity

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is created in the learning process which includes the construction of identity, as a person becomes a different person. Being an active member of a community, people create identities that relate to that community, creating a personal "history of becoming" (Wenger, 2009) in this way, identity is a person's sense of who he is /she is, it is like a lens through which he/she creates his/her experience, positioning himself/herself in the social environment. In the process of learning identities emerge and these identities contribute to learning, acquiring new knowledge and skills, forms of participation, creating new identities that correspond to their community (Nasir, 2002), influencing how teachers think and act (Ayoma et al., 2016).

In the framework of this work the narrative definition of identity by Sfard and Prusak (2005) is most appropriate, covering individual and collective influences, the dynamic nature of identity, but also practices that characterize the existing identities and the beliefs behind them, can be used to identify them and characterize the beliefs.

Summarizing what was written above, it can be said that beliefs are a way of expressing identity, which can be seen in individual and collective narratives, in contradictions, they have been formed in communities in social interaction, influencing the teacher's actions. In addition, the narrative approach makes it possible to learn about everyone's individual beliefs, as well as to identify differences in beliefs and practices, which can also exist in the field of education (Goldin et al., 2016).

Essential role of the Agency

Agency is the third essential concept in this study, as it describes a person's active actions, not passive acceptance of the situation and participation. Luehmann (2007) writes that the implementation of educational reforms requires new teacher identities, but when trying something new, there is a risk of not being recognized and the usual order will be disrupted, so many teachers are not motivated, afraid and resist. Thus, a tension is created between past experiences and the existing discourse, and past experiences have a stronger impact on identity (ibid). Understanding and learning about the agency allows you to see and solve this dilemma.

Two different perspectives on the interaction of agency and identity are discussed below. In the first approach, identity formation is already interpreted as a form of agency, adopting an identity, creating an identity (Hsieh, 2010). It begins with the choice of repeating practices, reactions, conversations over time, further understanding oneself in these practices, taking into account the experienced social interaction and feedback as a response to the newly adopted identity (ibid.). Although the authors emphasize the presence of agency, it does not significantly

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affect the existing order, so in this case we choose another approach that clearly describes the influence of agency on changes, including beliefs and actions.

Agency, viewed at the individual level, is not just a hope or a prediction of future actions, it is an active commitment that is converted into action, subordinating priorities to it, regulating one's behavior, cognitive processes, and the influence of the environment (Bandura, 2001). This is the teacher's active contribution in his/her work, taking responsibility for the quality of one's own provided education, for example, by critically reacting to problem situations, creating conditions to reduce them in the future (Biesta & Tedder, 2006).

The influence of structures is essential in the existence of the agency. It can be weak in an environment where a person has limited power (Holland et al., 1998), so at the level of education policy one should think about how to empower teachers by promoting Teacher agency, rather than imposing oppressive power relations (Aoyama, 2021). It is equally important to look at education more broadly. Assuming that education is only the achievement of certain standards, moving away from content, goals, relationships, it is demanded that the teacher should become an evidence-based professional (Biesta, 2015). In an effort to reduce teachers' opportunities to make decisions and control their own work, teacher agency is replaced by a data-driven approach, but an externally determined vision of good education limits Teacher agency, while a healthy discussion about teaching and education in general promotes it (Biesta et al., 2015).

Summing up, it can be said that the concept of teacher agency allows the teacher's identity and beliefs to be combined with active action aimed at teaching different students.

The interaction of beliefs, identity and agency as a theoretical framework

We have previously described three concepts – beliefs, identity and agency, briefly sketching their mutual interaction. The concepts are chosen to identify the beliefs that exist in the field of education and how beliefs characterize and influence teaching. Beliefs in this work mean the discourses existing at the individual and collective level, which, having formed and strengthened, influence the decisions, motivation and actions of teachers.

However, as already mentioned, cognition of beliefs is a complex process, therefore, the identification of narrative identity was additionally chosen for characterizing the discourse, the teacher can understand the beliefs that stand behind them through stories that describe themselves and others, assigning meanings, creating images. In our case, the identities expressed in the narrative are like the glue that binds the discourse to the person, allowing to reveal beliefs that can be contradictory, ambiguous and different at individual or collective levels.

On the other hand, the concept of agency allows one to see and explain how beliefs and identity influence the teacher's active actions, to take responsibility,

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making efforts and influencing processes so that students learn. Agency may also not be present, the teacher and teachers may have beliefs that influence not taking responsibility, beliefs may also reduce agency (Biesta et al., 2015), so it is important to reveal, understand and explain this interaction. Research questions also follow from this theoretical framework: what collective and individual beliefs characterize student teaching? How do conscious beliefs affect teacher agency?

Methodology

In order to find answers to the research questions, case analysis was chosen which can help clarify the significant influence of the context on both causes and consequences (Cohen et al., 2008). On the other hand, the research process itself is similar to ethnographic research because it describes and analyzes beliefs (Freebody, 2003).

The selected school as a case meets the following criteria: the school is located in a city and is attended by students of all age groups and different levels of academic achievement (winners of olympiads and individuals who are exempt from exams), has participated in the education reform project as a pilot school, the management team recognizes education reforms as a challenge, the school is eager to participate in the research and is open to sharing of data.

If the goal is to obtain as much information as possible about a problem or phenomenon, it is necessary to analyze extreme cases because they provide more information (Flyvbierg, 2006). In this case, a group of teachers teaching one subject was studied, and the extreme status was assigned to this group by the school management team, saying that mathematicians who work with students from grades 5–12, unlike other teachers, are not united in their beliefs and communicate relatively little with each other, requests from parents are received about some of the teachers to introduce changes. This study is part of a larger study focused on the study of teachers' beliefs and practices, which is ongoing. Therefore, this article will not describe all the data obtained and neither all the findings be reflected.

Three methods were used to collect information – partly-structured interviews, observation and unstructured interviews. Data related to this article (study) have been obtained during the period of March-May 2022.

Interviews were conducted with all 8 teachers, covering the following topics – a good teacher, practices where it can be seen, teacher's growth and what influenced it, interaction with colleagues, what it gives/takes away; challenges and satisfaction.

A total of 8 academic lessons and 5 extracurricular teacher-student communication situations were observed. Which lessons to observe was the teachers own choice, this was done to reduce the anxiety that can arise when a person not

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belonging to school observes a lesson. In the process of data organization and analysis mainly grounded theory (Glaser & Strauss, 1967) was used, taking into account the criticism of other sources and additions to the theory, because, as Thomas & James, (2006) emphasize, the success of this theory is the introduced reliability test, but the researcher who uses the whole theory of justification risks to lose the essential meaning of interpretation. In the process of data analysis, the main steps should be noted: acquaintance with the data, categorizing them by separating groups of topics, cutting the data by placing a topic or problem in the center (for example, contradictions that characterize certain beliefs), comparing and interpreting.

Prior to interviews the teachers were informed about the use of the acquired data in research and security of anonymity of respondents. Teachers were asked to give the interviews by phone at the time convenient for them. Information was presented after classes or in the days when the teachers were preparing for the work with their students. On the average an interview lasted 60 minutes. One of the teachers refused to record the conversation, the rest were recorded and transcripted.

Results

This study examines the perspectives of mathematics teachers on the main task of their profession. Through analysis of teachers' stories and reflections on their teaching practice, the research finds a tension between the belief that mathematics is a tool for stimulating thinking and the reality of classroom practices that may not always be thought-provoking for all students. The study also highlights non-participatory power relations and the recognition of innate abilities in students' thinking as factors that contribute to this dilemma. Additionally, the focus on state-mandated exams as a measure of success in the teaching of mathematics is discussed as a potential hindrance to the development of critical thinking skills in students. The study ultimately highlights the need for a re-examination of the purpose and methods of mathematics teaching in order to promote the development of critical thinking in students.

Dilemma: The Dual Purpose of Mathematics Teaching

Dilemma – what is the main task of a mathematics teacher? In the teachers' stories about themselves and teaching mathematics, two different directions describing the meaning of their work appear. Primary teachers describe their subject as a tool that is essential for a person, stimulating thinking, but at the same time, in other episodes of the stories, they reveal contradictions that make you doubt about the existence of such a belief:

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1) the learning methods implemented in the classroom cannot always be called thought-stimulating for all students, for example, some students may be quiet and little involved;
2) teachers describe and demonstrate non-participatory power relations, a truly immersive disposition;
3) teachers recognize that students' thinking is related to innate abilities;
4) teachers say that the results of their work can be seen in state-mandated exams, and there are no stories describing how students have improved their thinking.

Talking about exams, teachers no longer mention development of thinking. The broad perspective is lost, the stories reveal the gamut of teachers' emotions – pride, shame, fear, anger, acknowledging that the quality of their work is determined by what the students achieve. All teachers develop this topic by mentioning the exam in 14 different episodes in one interview. Therefore, it can rather be said that teachers believe that their task is to prepare students for exams.

Next, we will look at and analyze the teachers' narrative in more detail, which will further explain and justify the above-mentioned conclusions.

At the beginning of the interview, when talking about themselves as teachers of the particular subject, the interviewees emphasize that the task of the mathematics subject and teachers is to teach thinking and solve problems. For example, one teacher says:

> those math tasks, (…) they give something to the character, (…), (my task) is not to grow you in length, width, but to wrinkle your brain". Another says seeing regularities, another says that the task of mathematics is to teach a person to think by explaining it: "Know what the problem is, don't throw your hands in the air (…), divide it into smaller parts, which in turn (…) maybe you don't understand something, then you can ask.

The existence of the belief could be confirmed by the situations observed in the lessons – the techniques taught by the teachers, which promote students' active participation, independence and (possibly) thinking, for example, working in groups, testing their knowledge and skills; reminders about independent ways of looking for help, the option to work extra, explaining the solution to others, etc., but not all students follow the course of the lesson, only part of the students ask questions, there are children who sit quietly, write something down (later it turns out – some of them imitate writing down or transcribing what others have written). Therefore, the first contradiction that appears in the data is – teachers' beliefs on the role of mathematics cannot always be seen in practical work in the classroom.

The other contradiction – activities described by teachers, which "teach to think" cannot be interpreted unambiguously. For example, the most frequently

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mentioned thinking-stimulating strategy described in the interviews and observed in the lessons is teachers' deliberate mistakes. This is how the teacher retells the information about herself given to the students in the interview:

> *Don't trust me, I am going to deceive you (…) I will make mistakes, I will make mistakes very often. Sometimes they will be careless mistakes, but sometimes they will be on purpose, simply so that you (pause) think along all the time, so that it is not that we write down and shake our heads, but the main thing is that it is felt in the brain.*

This example clearly shows a power relationship that could be formulated as "I will force you to think". Similar situations, when the teacher uses power hoping for more active involvement of the students, have also been observed in several lessons (the teacher shouting, punishing with extra work, changing the student's seat to the far corner of the classroom), although it must be recognized that the use of power strategies is not characteristic of all teachers, or the teacher uses them against some students.

When learning mathematics, it is important that classes are formed as mathematics learning communities, when learning together, students acquire not only new knowledge and skills, but also forms of participation, further encouraging the emergence of new forms of participation while setting new and more complex goals (Nasir, 2002). On the other hand, power relations do not contribute to the formation of communities where there is equal participation, power relations can distance students from learning. In addition, in such conditions students are not given opportunities to exercise agency in various ways (Nasir & Hand, 2006). Therefore, it can be said that teachers, on the one hand, say that they teach thinking, but on the other hand, they take away this opportunity.

The third contradiction which calls into question the belief of mathematics as a tool for developing thinking, is the characterization of the so-called good students. The thought process of these students is interpreted as a "genetically determined" reward that is used in the lesson, rather than a process and outcome influenced by the teacher. That one teacher describing his/her excellent student, says: "Others still beat:

> *Why do I need this and I won't need this" and something else, she never beat about it (…) And that's what I see that she was used to the fact that when there are problems, (her) brain immediately solves the problem, instead of looking for excuses (…) just like in math problems.*

A final contradiction that calls into question the belief that a math teacher develops thinking is the glorification of student test scores, pointing out that it is a measure of the teacher's quality. In these stories, there is no connection with

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mathematics as a tool for developing thinking. The emotions expressed by the teachers, the pauses in the stories. The significant preponderance of the stories allow us to conclude that the teacher believes that his/her task is to prepare the students for the exam. Let's look at some examples.

The teacher who started working at the school recently, talks about his/her students and concerns:

> *I hope it will be better than the average in the country (laughs). This is already a high-ranking school, if, and in general, the results should be much better than the average in the country.*

Next, naming 5 reasons that would justify an insufficiently high assessment of students, therefore "There should not be very high expectations, it's just that".

Another teacher tells about the betrayal she experienced – a colleague who works in a parallel class, had copied and forwarded the mock exam papers to the students. There are pauses in the teacher's narration at this moment, she doesn't say everything, and the interviewer asks: "It doesn't sound fair..." she answers – "Yes!" and pauses with the interviewer. Another teacher tells how important it is not to help students in the exam "because I'm interested in what I've taught them, well, how much I've taught them – well, how much I've done and how much I haven't done. Yes. It's for me, the report".

One teacher describes the emotions he experienced:

> *There was one kid who was always calculating with the application at the beginning, in the end I posted a mark 4, (…) he barely got it. He did not study more and passed the exam with 18%. Horrible!! What a shame, I can't ….*

Many stories are devoted to how teachers find a way to stimulate students to prepare for an exam, for example, by posting a failing grade in the semester, which, with active work, can be corrected in the coming weeks. Some students are advised to get medical statements which exempt them from taking the exam. There is an impression that students would be satisfied with low results in exams, as long as they are allowed to finish school, but teachers are not satisfied with this.

In the described situations the teacher's agency can be seen – an activity aimed at achieving a goal that is important to her/him – high results. It is also supported at the collective level, for example, by emphasizing the importance of exams to all respondents, describing their actions, interpreting the actions of others. However, in this case teachers' identities and agency maintain unchanged beliefs about their role as a teacher.

It can be said that the main task of the mathematics teacher mentioned in the interviews is to teach to think, but it does not characterize the teacher's beliefs which are visible in practical work, it is more like a slogan. It is possible to agree

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with Kaša (2009) that the culture of exam results as a priority prevails in the education system in Latvia.

Similar findings are expressed by Biesta and colleagues (2015), describing the work of teachers in Scotland. According to them, narrow goals determine limited activities in the classroom. It can be said that in our situation, teachers who prepare exam takers direct their agency towards achieving a limited goal, without even trying to see other possibilities to promote mathematics teaching, for example, creating a mathematics learning community in the classroom.

Some students are not able to study in the classroom together with others

Teachers' narratives describing students and the learning process can be divided into two large groups. The first group consists of teachers who recognize that teaching all students is a challenge, they cannot cope with it. The other group of teachers express the opinion that they are able to involve and support different students in the learning process, but the data does not support this. Therefore, it can be concluded that the individual and collective narrative in the school confirms the belief that some students cannot acquire the content intended for learning in the classroom well enough, together with the rest of the students. This belief limits the teacher's agency, the responsibility for students for whom learning is a challenge, by handing them over to other people – parents, private tutor. In the described interaction, the collective sense of academic emphasis and academic optimism is not formed, which would allow to accumulate positive experiences and develop inclusive practices for all students.

Stories about students that teachers have difficulties to teach appear in the narratives of all teachers. Only one teacher, who started work at the secondary school level relatively recently, emphasizes that the students of this school have passed the selection and compared to the students of other schools, all of them are able to study well enough because "the basics have been mastered". All the stories of the other teachers are individually different, but they are united by one theme – it is difficult to teach some children, and it is impossible to do it during the lesson.

One teacher expresses her thoughts that some of her students are not able to learn mathematics at all:

> *how can I say it… so that it doesn't sound wrong, I mean that the teacher cannot teach everything.*

Later in the interview, talking about the students for whom learning is a challenge, the teacher emotionally continues:

> *In the classroom I do everything. when they don't do it, I poke, poke, poke, poke, poke, they sometimes know that I am especially strict to them, and I will ask him while he will be able to answer the same kind of questions.*

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Later in the interview, anger is replaced by apathy:

> *I do have those. I say one, two who I don't care about at all, the main thing is that he doesn't make any noise, that he doesn't disturb the lessons, and then do what you want, I don't care anymore, I'm already tired.*

Another teacher says:

> *"In the class they may not be able to think in their slow pace, but the problem is, because there are also smart children in my class, I can't slow down those clever ones all the time, well, then I mostly choose the middle level and those bastards have a … hard time, um, they have to catch up and those who are smart kids, um, well, you understand, yes?*

This narrative characterizes "bell-curve thinking", which marginalizes those students who are at the ends of the curve and characterizes the teacher's approach to learning the curriculum instead of teaching all children (Florian, 2015).

In the described situations the teachers openly admit difficulties to work with all children in the classroom, but the other teachers are confident that they support all their students in the learning process, but the data indicate discrepancies.

The teacher who works with students up to the 6th grade, emphasizes diversity in the stories as a part of the school's everyday life, accepting it: "I have a painter here, a reader over there (…) Those children are very different. That boy (points to the empty bench) is having a hard time. Benevolent, ready to do anything, he has confidence that everything is fine", but as a result, there are rarely solutions without mistakes. "There are silencers from whom it is difficult to get anything at all." The teacher admits that she does not really understand some children: "children are different. They are teenagers in space. In the 4th grade they press buttons, but they can't understand the clock!". Greater contradictions appear in the teacher's story about providing support to students, comparing it with what was observed. In the interview the teacher explains that she supports students by working individually and facilitating tests. However, while observing the lessons, the teacher did not pay attention to these children, saying that they should come to study after the lessons. What's more, the teacher used frontal knowledge transfer, telling her stories and having the students to complete tasks. For example, when solving tasks about time, the clock was not available as a support.

In the senior classes one of the teachers said in the interview that she accepted all kinds of students. In her previous work she had been able to integrate children with mental disabilities in the class. As the teacher explains, a very detailed preparation for the lessons helped her, to which the teacher devoted a whole day

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every week. However, the observed situation in the classroom is different – one of the students cannot keep up with the processes taking place in the class. He is late, makes mistakes, so he doesn't keep up with the pace of the class again, starts behaving inappropriately – walks around the class, tries to start a conversation with the boys in the next row who answer him. The teacher scolds, calls the student to order and turns her head. After the lesson the interviewer asks the teacher why she doesn't adapt the task to the boy's learning needs, receiving back a blunt, angry answer "Where can I find time for this? And the materials are not available either". The data collector gets the impression that he has crossed the boundaries, with this question indicating a lack of professionalism that has offended the teacher. This student is not included in the teacher's story about the day dedicated to preparing for work with students.

The contradictions identified in both described narratives, supplemented by observations, can be interpreted as giving socially desirable answers, creating a slogan – "I support the learning of different children in the classroom", as the teacher herself believes that this is the case, rather than existing beliefs. What is said is not followed by decisions and active actions, so it should rather be concluded that teachers at the collective and individual level do not see the opportunity to work in the classroom with all students, although not everyone sees and admits it. A similar conclusion is described by Biesta and colleagues (2015) – some teachers in Scotland admit that including less able pupils in the classroom is not useful, as teachers interpret the pupils' abilities as fixed.

This data can be interpreted as the absence of sense of academic emphasis (Woolfolk Hoy, 2012) in the mathematics community because teachers are not focused on the learning of all students and the formation of appropriate behaviour in the classroom. Teachers' beliefs about the sense of academic emphasis can be seen in the behaviour demonstrated by the teacher, the thoughts expressed, and the actions taken, which increase the active participation of students in lessons, which further affects their learning (Woolfolk Hoy, 2012; Hoy et al., 2008; Smith & Hoy, 2007). This type of discourse and practice cannot be observed in school yet.

This interpretation is also confirmed by the theme developed by five teachers – there are children who are unable to learn without additional support implemented outside of class, parents should provide it themselves or by hiring private tutors. In the interviews teachers openly say that children study with private tutors who are their colleagues, and this is recognized and appreciated. On the other hand, not looking for a private tutor is a sign of insufficient investment:

> *Others have parents who don't care at all. That parent has shown no interest, nothing, absolutely nothing. And there are children who are not good at it and, for example, if I write a letter or I communicate on the phone or something like that with parents… and then you can feel that little work has been done there,*

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or there, for example, a private tutor has already been found in time, that parent is quick (…) has responded to everything quickly with that child. Not that he has been doing nothing for 4 years.

At school there is also an opportunity to receive individual counselling within the framework of a state-funded project, but some students do not value it. "Students don't have time. (…) They come irregularly, if the parents pay, then they appreciate it." Another teacher: "But those who come to (the project) are the ones who want it. Those who don't want to, they don't come there at all, they miss the lessons there", the project does not reach those students who need it.

Discussion

The teachers' beliefs revealed in the study, by which we understand the individual and collective discourse that affects teachers' decisions, actions, motivation or agency, which can be seen in identity narratives when teachers describe themselves and others, gave the opportunity to understand that the beliefs existing in the field of education can be hidden, not always consciously for the teacher himself/herself.

Some teachers primarily express a socially desirable vision ("the task of a mathematics teacher is to develop thinking", "I am able to teach and support different children"), which we call slogans; they were seen in practice only in individual cases. Instead, it can be said that teachers are convinced that their main task is to ensure high academic achievement in exams but reaching and teaching students who are not sufficiently engaged in learning is the responsibility of parents and private tutors – this does not interfere with the identity of a "good mathematician". Therefore, we can agree with the conclusions of Biesta and colleagues (2015) that teachers' narrow interpretation of the purpose of teaching mathematics determines a limited choice of activities. On the other hand, other people are responsible for students who cannot achieve this goal. In addition, individual and collective views demonstrate the unequal access to education, the essential role of parental capital in learning. This creates a risk that students, having experienced the tension associated with the orientation towards the highest possible performance, may not engage in lifelong learning (Harlen & Crick, 2003).

Teachers' beliefs expressed through identity and practices allow us to see teacher agency. Teachers make an active contribution to achieve the highest possible results in a mathematics exam, while agency cannot be identified when teachers describe teaching children with learning challenges. Therefore, it can be said that beliefs directly affect the existence of teacher agency.

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Our study is an ethnographic case study, the examples discussed represent only one community of mathematics teachers in one school, and although the findings are compared with those found by other authors, they are not generalizable. However, we agree with Flyvbierg (2006) that the power of the case is not sufficiently appreciated because teachers' stories, compared with what was observed in the lessons, allow us to identify the *grey zone*, which is essential to help realize the real situation, discuss it and further implement changes in schools.

Conscious beliefs narrowly interpret the goals of education, the professionalism of teachers, limiting the availability of equal education for all. Therefore, we can agree with Biesta and colleagues (2015), who ask questions to which we also need to get answers – who should take responsibility for students' learning and how to protect students from the shortcomings of the education system? The answers to these questions should be sought in future study.

Conclusions

Researching teachers' beliefs is a challenging task, beliefs are not immediately visible, not always what the teachers tell describes the beliefs, they can be hidden and can only be seen by observing practices and comparing them with what is told.

For finding out the beliefs we can use the concepts of narrative identity and agency, it gives an opportunity not only to understand what kind of beliefs exist at the individual and collective level, but also to explain how they affect the teacher's actions or passivity.

These concepts in mutual interaction made it possible to see the contradictions existing in the field of education – a wide interpretation of the meaning of the subject, which in practice manifests itself as preparing students for the exam, or verbally expressing the acceptance and support of different students, which is not related to practical actions. It is these findings that allow us to conclude that learning and analyzing teachers' beliefs can help to reveal and explain developments in the school.

Beliefs limit the opportunities to implement curriculum reform that has set broad educational goals and is focused on expanding the learning opportunities of every student, so it is necessary to think about how to talk to teachers about beliefs, taking them out of the *grey zone* so that we could further look for opportunities to challenge them and change.

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Global and Citizenship Competence Conceptualization Through Sustainability Paradigm

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ABSTRACT

Nowadays, the ideological focus of sustainable development is leading in all industries worldwide. Sustainable education enriches the understanding of the link between social, ecological, and economic needs; develops the ability to take responsibility for their own daily choices and contribute to a fairer future for present and future generations. All levels and areas of education invest in sustainable development, including higher education programs, which play a crucial role in putting sustainability ideas into practice.

Therefore, in April 2022, the University of Latvia implemented the second round of the study, "Assessment of Competences of Higher Education Students and Dynamics of Their Development in the Study Period", within which multidimensional research of students' transversal competencies is continued.

The first round of the study identified that the theoretical approaches to the distinction and consolidation of global and civic transversal competencies are contrasting. For that reason, this study aims to analyze civic and global transversal competencies' common, diverse, and unifying aspects. The design of a cartographic review was chosen for conceptualization. The aim is to structure the literature items included in the study, based on which a classification scheme was created, and the field of aspect coverage was identified.

The study data were analyzed using the qualitative data processing program NVivo 12.0. As a result, the various aspects of the two transversal competencies have been identified. The theoretical framework of global civic competence is formulated based on the aspects identified in the coverage field.

Keywords: Citizenship Competence, Civic Transversal Competence, Conceptualization, Higher education, Global Civic Transversal Competence, Nvivo

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Introduction

Over the past 30 years, the concepts of global and civic transversal competences have established themselves at all levels of education worldwide. Global and civic competence are regularly used in political, social, cultural, economic, and educational contexts. However, the conceptual use of these competencies in educational policy documents and research is inconsistent.

In April 2022, the implementation of the second round of the national-level study "Assessment of the competencies of students in higher education and the dynamics of their development during the study period" has been started, within the framework of which the multidimensional research of the transversal competencies of the students is being continued.

Inside the first-round range, it has been identified that the theoretical approaches to the distinctions and consolidation of global and civic competences are different (Rubene et al., 2021, Medne et al., 2021). Therefore, one of the tasks of the second round of the study is determined to identify the rationale for the division or combination of global and civic transversal competences in the framework of transversal competences in the context of sustainable higher education. Global or civic transversal competence, together with the need to give it meaning in the context of sustainable education for stakeholders, makes these concepts attractive from an educational perspective, as they require shared meaning-making and understanding.

This is because the content of all these concepts closely overlaps, as the mentioned transversal competences and sustainability can be included in the study process. On the other hand, sustainable higher education is the acquisition of specific competencies and qualifications and the development of human talents, emotional intelligence, and personality (Medne & Jansone-Ratinika, 2019). The European higher education space's quality assurance standards and guidelines formulate the idea that higher education institutions are responsible for creating a sustainable culture by developing certain principles focused on student-centered learning, teaching, and assessment (Cirlan & Loukkola, 2021, ESG, 2015).

Therefore, all levels and fields of education invest resources in implementing sustainable development, including higher education programs, which play a vital role in the transition to implementing sustainability ideas in practice as one of the solutions of valuable practice in the context of sustainability for ensuring quality education in the long term, which allows universities to ensure the sustainability of education itself, remote learning opportunities and digitization of the study process are emphasized (Baranova et al., 2021). In the context of distance learning, the issue of learning global or civic competences at the level of practice expands its boundaries: how to promote their learning in a remote format. As another pedagogical solution for effective search, simulation is offered, one of the teaching methods considered adequate because it best connects theory and

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practice and promotes the acquisition of specific professional and general skills (Medne, 2022).

Additionally, conceptualizing notions of global competence or civic transversal competence and their integration in the learning process becomes an intrinsic part of the study. Research data show that the conceptual and practical issues related to the concepts of civic and global transversal competence for students at the higher education level are complex both conceptually and practically. On the other hand, their contextual issues are: the position of higher education institutions in the acquisition of these competencies, the ambiguity of terms, the issues of values related to them, the position and ideas of the students themselves, the interest of employers and the social and political situation (IEAA, 2014).

However, Global competence, less historically rooted in an educational context than civic competence, has influenced the current focus in education on educating for global competence (Evans et al., 2009). The formulated project tasks and the analyzed problem settled the purpose of this study – to determine the stability criteria of global competence in the identified literature units.

Methodology

A selection of studies, reports and international education policy documents were initially carried out to implement the research. Overall, studies ($n = 16$), reports ($n = 2$) and policy papers ($n = 3$) met the inclusion criteria. The study included studies whose time frame is 2017–2022 and educational documents from 2014-2022. Various studies were included – systemic literature reviews, empirical studies, policy documents, scientific journal articles, and technical and project final reports. The subject of research was defined as civic development and global civic competence. Boolean search operators were used in the selection of literature units: "Citizenship Competence," "Civic Competence," "Global Competence," "Higher Education," "Global Civic Competence," and "Global Citizenship Compet."ce."

A cartographic review strategy (mapping review) was chosen for the study, the purpose of which is to structure the literature units included in the study, create a classification scheme and structure the field of interest to identify the coverage of criteria in the research field. By choosing mapping methodology, topics, and the context in literature units, the study's authors try to introduce a new and productive way to analyze and discuss the concept of competence in education, considering the diversity of competences.

Data analysis and synthesis – performed according to the narrative synthesis type, which included three consecutive steps:

1) defined logical categories (codes),
2) analyzed data from each obtained category (the content of codes),

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3) synthesized questions about all included logical categories (Petticrew & Roberts, 2006).

The SPIDER (Sample-Phenomenon) strategy was used for a structured qualitative systematic selection of publications (Cooke et al., 2012; Booth, 2016). Inclusion criteria:

a) published between 2016 and 2022,
b) content and form analysis of civic and global civic cross-cutting competences conducted in the higher education space
c) published in English. Exclusion criteria: no access to the full text.

The research content was analyzed using qualitative and quantitative contextual analysis in the qualitative data processing program QSR NVivo 12. Linguistic processing and analysis of the literary units included in the analysis were carried out in the following order:

The choice of data processing program NVivo in the study was determined by the fact that it increases the validity of qualitative research (Siccama & Penna, 2008). The study was carried out from May 2022 to August 2022.

The research was carried out in four steps of group cooperation:

1) initially, research participants agreed on the criteria for inclusion of literature units and the research design,
2) identification of studies, which researchers carried out individually,
3) two participants performed double coding of the included publications, the program showed 86% codes coincidence, which is considered high,
4) the research group discussed the obtained results and their possible interpretations.

Results

The data search strategy was carried out using open-access databases: PubMed, ResearchGate, SciELO, Cochrane Library, Campbell Collaboration, EppiCentre, ScienceDirect, SpringerOpen, and Academia. The framework of the structural concept of Arksey and O'Malley (Arksey & O'Malley, 2005) was chosen for the design of the research protocol, which was further developed by The Joanna Briggs Institute in five stages:

1) identification of research questions;
2) identification of scientific literature;
3) selection of scientific literature according to criteria;
4) data analysis and synthesis;
5) compilation of data into tables.

In the five-step framework, the second and third steps integrated the four-step data selection scheme of PRISMA (Moher et al., 2009): identification-screening-eligibility-inclusion.

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After identifying the primary studies, an initial assessment was conducted to determine whether they met the inclusion criteria and the basic quality requirements: clear and precise statement of the objective, clear description of the study, method, and sufficient amount of raw data). After duplicates were excluded, eligible studies were included according to the inclusion/exclusion criteria for evaluation. At this stage, most publications were excluded from inclusion in the study because they did not meet any of the exclusion criteria for inclusion in the study (Timulak, 2014). (Table 1)

Table 1. PRISMA selection scheme

Studies identified in databases PubMed, ResearchGate, SciELO, Cochrane Library, Campbell Collaboration, EppiCentre, ScienceDirect, SpringerOpen, and Academia ($n = 32$)
Observation of Duplication of studies ($n = 4$)
Studies after initial evaluation ($n = 28$) Excluded studies $n = 7$
Studies included qualitative synthesis ($n = 21$)

The included literature units ($n = 21$) were sequentially entered into the table created in .docx, the structural components of which were determined according to the purpose of the study: publication title/availability; year of issue; institution/author; nature of the content/ context; identification of competence or competence type (G, P, G/P); criteria and their indicators.

In the identified units of literature ($n = 21$), the following conceptual units of the competence group were placed: global competence ($n = 5$), civic competence ($n = 5$), global civic competence ($n = 9$), sustainability competence ($n = 1$), and comprehensive global competence ($n = 1$). When initially selecting, structuring, and reviewing the studies, it was concluded that a specific methodological choice for the name of competence in the literature units was not justified. Therefore, in the next step of the research, the full texts of the literature units in the original language were uploaded into the Nvivo 12 program, and global aspects were identified.

The global perspective in this study was determined by the fact that all the mentioned competencies included the global dimension, and the aspect of sustainability was revealed in their content. Thus, global competence expands the boundaries of understanding the concept of civic competence and education for sustainable development, simultaneously expanding the ambiguity in the use of these concepts. Deductive coding was chosen as the coding method. The choice is based on the basic idea of the deductive approach, which provides structure and theoretical relevance from the outset. It is a top-down approach in which the first step is to identify a set of codes, and the second step is to identify the codes within the literature units.

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The set of codes for identifying the global dimension in literature units was determined according to The OECD PISA global competence framework (PISA, 2018): the four dimensions of global competence and understanding of their content:

1) knows issues of local, global and cultural importance,
2) understands and evaluates perspectives and worldviews of others,
3) engage in open, appropriate, and effective intercultural interactions, and
4) act for collective well-being and sustainable development.

This generation and application of criteria were chosen because it minimizes the risks of a highly subjective selection of literature units.

To meaningfully understand the content of the identified literature units, full texts in the original language (English) were imported into the Nvivo 12 program. The next step was deductive coding (identifying themes and contexts by assigning a code to the relevant passage of text). During deductive coding, all the codes determined by The OECD PISA global competence framework (PISA, 2018): global competence were identified following the purpose of the study. The identified codes are summarized and visualized in Table 2.

Table 2. Matrix of frequency of use of codes identified in literature units

Code	The number of documents in which the code is identified	Total number of codes
Knows issues of local, global and cultural importance	21	65
Understands and appreciates other people's perspectives and worldviews	20	71
Engages in open, appropriate, and effective intercultural interactions	20	36
Acting for collective well-being and sustainable development	20	41

The frequency of use of codes indicates how widely and elaborately a question is presented in the literature units, also indirectly indicating the code's relevance. The frequency of codes obtained during coding shows that all four indicators of global competence are sufficiently detailed and widely characterized in the literature unit: knows local, global, and cultural issues identified in all literature units, a total of 65 times ($n = 65$), understands and evaluates other people's perspectives and worldviews identified in 20 literary units 71 times ($n = 71$), engages in open, appropriate and effective intercultural interaction identified in 19 literary units, as a code identified 36 times ($n = 36$), acting for collective welfare and sustainable development identified in 16 literary units in total 41 times ($n = 41$).

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In the further course of the research, the content of the global competence criteria is described in the publication according to the identified code frequencies in the NVivo program in descending order.

The most significant number of codes in the identified publications is for the criterion to understand and appreciates other people's perspectives and worldviews ($n = 71$). The second largest number of codes was identified for the criterion: knows issues of local, global and cultural significance identified in all literature units, a total of 65 times ($n = 65$). On the other hand, the criterion acting for the benefit of collective well-being and sustainable development was identified in 16 literature units 41 times ($n = 41$). The fewest identified publications deal with the issue of engaging in open, appropriate, and effective intercultural interaction ($n = 36$).

In implementing the research idea, the distinction of codes in the thematic units of the competence group updated in the study was looked at. The following tables present the distribution of codes by thematic units of competences.

Table 3. Frequency matrix of codes identified in literature units for global competence

Code	The number of documents in which the code is identified	Total number of codes
Knows issues of local, global and cultural importance	5	18
Understands and appreciates other people's perspectives and worldviews	5	21
Engages in open, appropriate and effective intercultural interactions	5	10
Acting for collective well-being and sustainable development	5	10

Table 4. Matrix of frequency of use of codes identified in literature units for civic competence

Code	The number of documents in which the code is identified	Total number of codes
Knows issues of local, global and cultural importance	5	19
Understands and appreciates other people's perspectives and worldviews	4	19
Engages in open, appropriate and effective intercultural interactions	5	11
Acting for collective well-being and sustainable development	5	12

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Table 5. Frequency matrix of codes identified in literature units for global citizenship competence

Code	The number of documents in which the code is identified	Total number of codes
Knows issues of local, global and cultural importance	9	19
Understands and appreciates other people's perspectives and worldviews	9	24
Engages in open, appropriate and effective intercultural interactions	9	9
Acting for collective well-being and sustainable development	8	11

Table 6. Matrix of frequency of use of codes identified in literature units for long-term competence

Code	The number of documents in which the code is identified	Total number of codes
Knows issues of local, global and cultural importance	1	5
Understands and appreciates other people's perspectives and worldviews	1	4
Engages in open, appropriate and effective intercultural interactions	1	3
Acting for collective well-being and sustainable development	1	4

Table 7. Matrix of frequency of use of codes identified in literature units for comprehensive global competence Matrix of frequency of use of codes identified in literature units for comprehensive global competence

Code	The number of documents in which the code is identified	Total number of codes
Knows issues of local, global and cultural importance	1	4
Understands and appreciates other people's perspectives and worldviews	1	4
Engages in open, appropriate and effective intercultural interactions	1	3
Acting for collective well-being and sustainable development	1	4

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As a result of the coding, it can be concluded that the global competence criteria determined by The OECD PISA global competence framework (PISA, 2018) can be identified in all the literature units included in the study. In the next stage, a qualitative content analysis was carried out, which allowed the authors to conclude that, regardless of the name of the competence (conceptual unit), the content of all codes includes the constantly evolving social processes, cultural context (local and global), people (behavior) and sustainability positioning in them.

Discussion and Conclusions

This study has several potential limitations:
1) limited scope of analysis, as only 21 literature units were found to be relevant to the research idea
2) reviews, reflect the search for the current state of the art in a specific field, but there is a subjective abstraction, misinterpretation, and risks of over-simplification, so according to this review, a risk of this study could be that the included literature units represent multiple fields (education, policy, health care, etc.). This can be considered a limitation, but paradoxically, it is also a convincing argument at the same time because it creates a wider focus,
3) only English language units of literature were identified and analyzed,
4) the methodology of the literature units included in the review was not analyzed and evaluated.

This review aimed to create a topography of the literature whose conceptual units are global competence, civic competence, global civic competence, sustainability competence, and comprehensive global competence. To implement it, 21 literary units were mapped. Mapping the research subject using the review design allows authors to conclude the following:

The literature units included and analyzed in the study reveal a high level of complexity in explaining this group of competences, both in theory and practice.

Global citizenship competence ($n = 9$) is mentioned as the dominant competence in the selected studies and documents, while global competence ($n = 5$) and civic competence ($n = 5$) follow in equal numbers. This conclusion reflects that the evidence base for the conceptual use of competences is not clear-cut. Authors interpret it as relatively open, unstable, and cross-sectoral. Thus, civic and global competence in research reports is also linked to the industry and its external and internal demands. Also, the interpretation differs in connection with social and political actualities, and there is no single, coherent methodological basis for their formation.

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Within the framework of this study, the research subject exhibits the dominance of the English language, which probably reflects a certain decontextualized narrowness, which in turn may affect the methodological narrowness of the ideas of understanding competence, as well as the limitations of the development of education policy, therefore, within the scope of this study, it is determined as a research limitation.

Although the identified tension in the context of the explanation of the concept of competence between generalization (transversal competence) and specialization (professional competence), taking into account contextual factors such as national and cultural differences and differences in educational levels, shows that such research is underutilized due to unsystematic review in the context of sustainability. The identified units of literature also show the diversification of competence definitions: sustainability competence ($n = 1$) (2022) and comprehensive global competence ($n = 1$) (2018). During the research, it was concluded that they include the same content units, this suggests that the stability of the content of these competences remains, but there is a tendency for the name (conceptual unit) to change.

Analyzing the texts of literary units, it can be concluded that citizenship is rarely associated with a specific territory. Today, in the context of globalization, this concept has been expanded by emphasizing that citizenship simultaneously means both status and social role. The first refers to the civil, political, and social rights the state guarantees its citizens (objective dimension). The second aspect includes the identity, values, and mental representations that each person formulates in relation to social life and the political-economic situation (subjective dimension). This subjective dimension can be attached to a particular region and nation but can also be an organization, a social network, or a supranational entity (Europe, the World). Already Habermas (1995) formulates a similar idea, calling this phenomenon institutional patriotism, which is a way of identifying with democracy and its institutions, not with a certain geographical space.

The dynamics of the understanding of civic competence and global competence as multidimensional concepts show that their nature is related to constantly evolving social processes and people's actions in them, which determines that the explanation of these categories is never final but can be qualitatively different depending on the context. Contextual aspects define the global dimension in understanding this set of competencies and present unique challenges in its precise formulation.

Both sustainability competence and global citizenship competence are based on solving world problems and developing the connection between the local and the global (home – local community – global world) in the social, economic, and environmental fields, thus essentially including/including the multidimensional aspects of citizenship competence.

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Mapping global and civic competence reveals the theoretical possibility of their conceptual combination – global – civic competence.

The analysis of the content of all identified competencies allows us to conclude that all competencies, regardless of the name, include behavioral indicators that ensure sustainable development and sustainability. To a certain extent, the evolution of concepts can be identified: civic competence – global competence – global – civic competence – sustainability competence, determined by the context of society and education policy, or the United Nations (UN) Sustainable Development Goals (SDG).

The purpose of this review was not to conceptualize any of the conceptual units of the research focus group of competencies, but to substantiate the breadth and depth of the global dimension conceptually and objectively in the twenties of the 21st century.

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Informal Learning for Creating Professional Support Groups for Teachers and School Leadership Teams: A Case Study

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ABSTRACT

From the school year 2020/2021 the implementation of a competence-based curriculum has started in Latvia which determines new learning outcomes for students and at the same time defines new professional development needs for teachers. There are changes in the content that teachers need to learn and the learning approach that teachers need to use for their professional development to ensure that they meet the new quality requirements of teaching. In order to successfully implement new teaching and learning approaches and to promote the development of a wider learning community, teachers' formal professional development, such as attendance at lectures, seminars etc., has to be supplemented with informal professional development through sharing experiences, participation in learning groups, etc. The remote work experience of the COVID-19 pandemic has provided additional opportunities for a variety of online in-service teacher education activities based on principles of informal learning. The goal of the research conducted by the authors is to find out what is the interest of teachers to get involved in the teacher cooperation events "Emergency Methodological Assistance" organised by the Friendly Appeal Cesis State Gymnasium and what are the professional benefits of teachers' participation in such informal learning activities. Within the framework of the research, a qualitative content analysis of the teachers' reflection bulletins has been performed, which teachers have submitted at the end of events, evaluating their professional benefits from participation in the events. The data of the research show that teachers appreciate the opportunity to get acquainted with professionally tested and practical teaching methods and techniques for the implementation of new curriculum, to receive encouragement from other colleagues in the conditions of constant change and uncertainty, and to find professional partners among teachers for long-term planning and cooperation activities.

Keywords: professional development, formal and informal learning, distance learning, remote learning, learning community

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Introduction

Along with the changes taking place in society, characterised by rapid digitization and globalisation (Kurer & Gallego, 2019), there are also changes in society's demand concerning the education sector, where new achievable results for students and employees are defined. The nature of changes in education is particularly evident in crisis situations, when the processes taking place on a national or global scale affect the content and the approach towards organising learning. Thus, for example, the global pandemic caused by COVID-19 determined the need to organise learning remotely, using various technological solutions, such as the internet and television. This also meant that the teachers had to learn new pedagogical concepts and teaching methods, the use of which they were not specially trained for before (Schleicher, 2020). The COVID-19 pandemic rapidly transformed learning by moving it online in many schools around the world (Hodges et al., 2020; Laganovska, 2021).

Online learning has also directly affected teachers' expectations, learning needs, professional skills and roles (Darling-Hammond & Hyler, 2020), creating additional cognitive, subjective, physical and social challenges (Viac & Fraser, 2020). In the context of the COVID-19 pandemic, new learning needs were defined for teachers, for which innovative online professional development solutions were sought. Moreover, this was done despite the findings of previous studies before the COVID-19 pandemic showing that teachers prefer to participate in face-to-face rather than online professional development activities (OECD, 2019).

Also, in the context of professional development of teachers, the pandemic caused by COVID-19 raised the question of how further education activities can help teachers become more effective leaders of their personal growth and learning, can provide access to tools that support teachers' specific learning needs, and promote cooperation and interaction between teachers, to increase the impact on their professional performance in work with students (OECD, 2020). As a result, more emphasis was placed on informal online learning in teacher professional development, thus creating innovative solutions for both how teachers work with students and how they organise their own professional development (Yu et al., 2021).

The aim of this research was to determine whether teachers are interested in participating in the online teachers' cooperation and networking events "Emergency Methodological Assistance" organised by the Friendly Appeal Cesis State Gymnasium, as well as to investigate what are the main benefits for teachers from participating in such online professional development events. A research of the scientific literature on issues related to the informal professional development of teachers and its implementation in distance learning was carried out. Also, a qualitative content analysis of teachers' reflection on these online events was performed in order to determine the categories of professional benefits indicated by teachers.

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Informal learning as teacher professional development

Informal learning is emphasised as a particularly important mechanism for increasing the professional capacity of teachers (Rogoff et al., 2016), as it provides the opportunity for teachers to choose the learning content and the most suitable form of learning according to their personal interests and current learning needs. Informal learning is not didactic because it does not identify a person whose role and responsibility is to teach others. It is organised through meaningful activities in which participants take part willingly, not forcibly; the learning process is based on the personal initiative, interests and choices made by the participants, not on externally defined achievable results, and does not involve external evaluation of the results achieved. Informal learning occurs as a result of social interactions where participants use their existing knowledge and skills to innovate and develop new ideas and skills (Desimone, 2009; Rogoff et al., 2016).

Informal learning refers to acquiring new knowledge and developing skills outside of a structured, institutionally organized learning environment. Such professional development takes place in a process of voluntary cooperation and exchange of experiences, where employees of one or more organizations interact (Marsick et al., 2008). Informal learning is a type of professional development that is not always purposefully organized, externally or internally guided, systematic and regular and does not have predetermined learning content. Informal learning occurs unconsciously as participants engage in activities that provide new learning experiences without pre-defined achievable outcomes, such as socializing with others, participating in conversations and discussions, etc. (Melnic & Botez, 2014).

Informal learning involves intensive use of previous professional experience and reflection on it. Learning in this format takes place as an exchange of knowledge and experience among colleagues, trying out new teaching methods and reflecting on the acquired experience, researching the professional environment inside and outside of their own school in order to gain new ideas for organising learning for their students (Lohman, 2006). Informal professional development is the result of observing the professional performance of other colleagues, conducting trials and analysing errors, asking for help in problem situations, talking with other colleagues and reflecting on one's previous experience (Dabbagh & Kitsantas, 2012, p. 4).

The purpose of informal learning is to provide teachers with continuous, goal-oriented competence development in the workplace, taking into account the real learning needs of the parties involved and using the knowledge, experience and available professional resources already accumulated in the organisation (Tynjälä, 2008). Therefore, unlike traditional professional development, which takes the form of lectures, conferences, seminars, etc. in attending similar events, informal learning enables teachers to meet specific learning needs and

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offer solutions to the challenges they face in their daily work with students. The positive impact of informal learning on teacher performance and professional competence is also determined by the fact that such learning is based on well tried and immediately usable examples (Cheng, 2017).

Distance learning as teacher professional development

Researchers point to differences in the use of the terms distance learning and remote learning when describing the teaching and learning process that was implemented during the COVID-19 pandemic. So, for example, distance learning has so far been considered as an opportunity for students to learn the full curriculum or individual parts of it remotely and self-directedly. Using the opportunities created by technology, such as TV, radio or the Internet, students can participate in the learning process organised in this way both synchronously and asynchronously (Anderson & Dron 2011). Remote learning, on the other hand, is associated with attempts to create and implement in practice the same organisational structure of the learning process that is implemented in face-to-face setting, and technologies are used to communicate with students, conduct lessons, check whether and at what level the set learning goals are achieved, and provide feedback on learning outcomes (Daniela & Visvizi, 2021).

Effective distance learning involves several interrelated elements: effective teachers, the use of appropriate technology, and engaged students. Teachers with good content knowledge, technical skills for using technologies and support resources, and appropriate pedagogical techniques are more effective than those who lack such skills. On the other hand, the availability and use of technologies appropriate to the learning context and learning goals is a prerequisite for distance learning to be possible at all (Muñoz-Najar et al., 2021). This allows us to conclude that in the context of teachers' professional development, it means that effective informal learning of teachers remotely becomes possible if the learning process is purposefully managed and organised, in this way, informal learning is supplemented with elements of formal or traditional professional development, for example, the person who organises the learning for others.

In the distance learning, the teacher's role and direct control over students and their learning decreases, while students' individual responsibility for their own learning increases, thus creating a demand for the implementation of a new learning approach (Azorín, 2020; Dhawan, 2020; Reimer & Schleiche, 2020; Digiuseppe et al. ., 2017; Bonde et al., 2014). This means that distance learning provides an opportunity to individualise the learning experience, develop self-directed learning and digital skills, and provides access to learning opportunities in situations where this would not be possible otherwise (Bonde et al., 2014; Dhawan 2020; Nolen & Koretsky, 2018). In the context of teachers' professional development, this means an opportunity for teachers to improve such important

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skills as defining their individual learning needs, setting professional development goals, organising effective cooperation among colleagues, meaningful use of technology in learning and other skills.

The professional development of teachers during distance learning can be viewed as informal learning, since the teachers themselves choose which online learning resources to use, which online learning activities to participate in, and the teachers themselves take responsibility for their learning results. Such professional development can be considered as experiential learning, which includes the creation of new online learning experiences and promotes the formation of alternative learning behaviour, which is manifested in the analysis of the performance of other colleagues and conversations about their professional practice (Manuti et al., 2015; Wolfson et al., 2018). The main differences between face-to-face and online informal learning are related to the fact that online informal learning provides participants with a higher degree of individual autonomy and a larger variety of learning opportunities, so it provides more advantages and better reflects the nature of informal learning (Yu et al., 2021).

Online informal learning is in a way an action research, where learning occurs to bridge the gap between teachers' existing and desired knowledge and skills needed to solve a particular problem or make a decision. As part of such professional development, teachers also collect information from several involved parties, try to understand and interpret it, as well as evaluate several problem-solving alternatives. Engaging in such learning activities is a social activity as it involves collaboration with other colleagues within one or more organisations. In addition, such learning is also influenced by several contextual factors, such as the existing power relations between the participants, the distribution of roles and responsibilities during learning, the access of all participants to the necessary learning resources, etc. (Watkins & Marsick, 2020).

Methodology

The research is based on data collected during Friendly Appeal Cesis State Gymnasium organised online events "Emergency Methodological Assistance". These are professional development events for teachers, where deputy principals or teachers who teach a similar subject and student age group and have started implementing the improved curriculum, meet. The purpose of these events is to provide an opportunity for teachers and representatives of school management teams to talk about the challenges they face in their daily work, and search for solutions to solve common challenges in their work, to share experiences and teaching materials, as well as to plan the implementation of the improved curriculum.

From 2020 to 2022 13 "Emergency Methodological Assistance" events were organised during the school year. These events took place online via *Zoom*

meetings and were organised according to the principles of informal learning – the participants themselves chose the content they wanted to discuss during the meetings and chose what they wanted to learn from colleagues they met during these events. Information about the possibility to apply for participation in the "Emergency Methodological Assistance" events was distributed through the Friendly Appeal Cesis State Gymnasium *Facebook* page and through local municipality Education Departments sharing the information through official emails and inviting to pass it on to interested schools. Participation in teachers' cooperation events "Emergency Methodological Assistance" was voluntary, thus the composition of participants in every event was variable.

At the end of each event, participants were asked to reflect on their learning experiences and benefits from participation in the event. Participants were informed that gathered data will be used in the research analysis of the learning event and could submit their reflections publicly using the *Zoom* chat feature or anonymously by sending a personal message in *Zoom* chat. As a result, 714 participant responses were obtained, of which 458 were selected for further analysis according to the purpose of the study. Responses that were too general or provided information other than participants' reflection on the benefits of participating in these activities were not included in the analysis. Before analysis for the purposes of this publication all data was anonymized. Participant response citations used in the article were translated to English by researchers, trying to preserve the opinions expressed by the participants as much as possible.

The analysis of the selected answers was performed using the qualitative content analysis method (Schreier, 2014) with the aim of defining the categories for grouping the benefits mentioned by the participants. In order to maintain objectivity in the analysis of the research data, researchers first grouped the responses of individual participants individually and defined their own analysis categories, then compared the obtained data and agreed on a common understanding for categorising data. As a result, 10 categories were defined, according to which all participant responses obtained were grouped.

Results

One of the questions raised in this research is whether teachers are interested in participating in informal professional development activities that are carried out online. The data obtained in this study show that a total of 1153 participants applied for participation in 13 "Emergency methodological assistance" events. Although not all participants took part in the online conversations, it can be concluded that the interest of teachers in this type of professional development in the context of the COVID-19 pandemic is high.

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The obtained data show that the number of participant applications for each event is different, where 59 was the smallest, while 110 was the largest number of participant applications (Fig. 1). Such differences can be explained by of several factors, such as the number of teachers who teach the specific subject in schools; content issues that have been proposed for discussion during the participants' meeting, as well as the period of time when the event has been organised – the number of applications during the school year is higher than it is at the end of the school year.
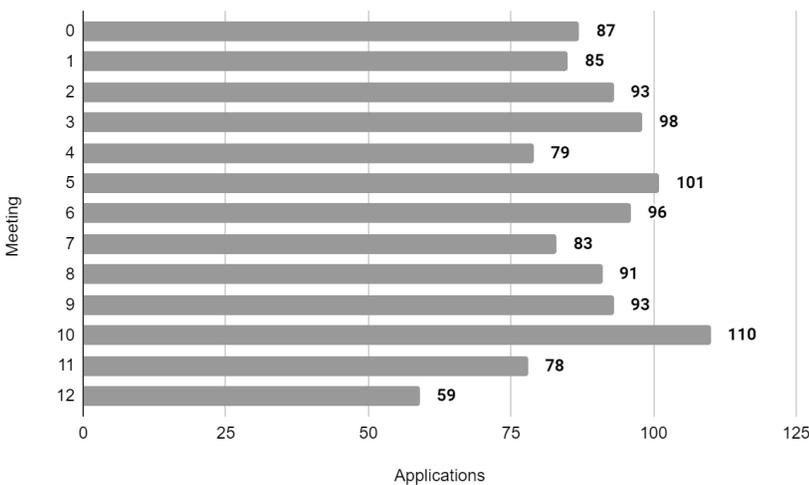
Figure 1. Amount of applications for each of the learning events

The second question raised in this research is what are the benefits for teachers from participating in the professional development activities of "Emergency Methodological Assistance". According to the data obtained in the study, the benefits mentioned by the participants can be classified into 10 categories:

1. professional conversations, sharing experiences, opinions, advice;
2. learning and work process organization;
3. learning materials, resources, ICT;
4. a sense of community;
5. belief that cooperation is a solution to common problems;
6. new valuable experience for professional development;
7. developing learning materials;
8. confidence in their work;
9. belief that professional development is needed;
10. inspiration for further work (Fig. 2).

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Professional conversations, sharing experiences, opinions, advice — 182
Learning and work process organization — 123
Learning materials, resources, ICT — 67
A sense of community — 66
Belief that collaboration contains possible solutions to common problems — 50
New valuable experience for profesional development — 49
Developing learning materials — 22
Confidence in their work — 18
Belief that professional development is needed — 9
Inspiration for further work — 5

Figure 2. Participants' benefits from attending learning events

The obtained data show that the most frequently mentioned benefit for participants from participation in professional development events of this format is the opportunity to participate in professional conversations with colleagues, to listen to the experiences of other colleagues and to share their own experiences, as well as to exchange opinions and advice. 182 participants have emphasised this in their reflections (Fig. 2).

> *I liked the fact that I could talk with colleagues who teach "my" subject, share experiences and insights.*

> *During the conversations with colleagues, I gained confidence in the direction I have chosen for teaching my subject. Also in these conversations new ideas arise that can be implemented in my work.*

The second most frequently mentioned benefit for the participants is related to the acquisition of new ideas for organising learning. Reference to such benefits can be found in the reflections of 123 participants.

> *(…) we all drive in the same direction, faster or slower, but we drive. I highly appreciate this opportunity to learn together (…). We created a great lesson plan on the Reformation in 40 minutes. Super teachers!*

> *I learned how to work with the [subject] syllabus and create a thematic plan. My benefit is really significant – I understood how to plan. I appreciate the opportunity to hear the experiences of my colleagues, which I will be able to use in my own work. Thank you!*

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Almost half as many participants – 67 – indicate in their reflections that their benefit is related to the acquisition of new learning materials and resources for use in work with students. It is evident that these events have been beneficial for teachers for obtaining information tested in practice and immediately usable teaching methods and materials for organising learning.

> *The task created by [a colleague] about verbs in songs will be useful for me. I will definitely use materials of the book publishing house "Liels und mazs" (…).*

> *I found out about websites where I can look for information and ideas for my lessons. (…) It was valuable to meet, surely such meetings should be organised more. I found out the answers to some questions that were relevant to me.*

An important benefit for the participants is also related to the fact that participation in the "Emergency Methodological Assistance" events has given teachers a sense of belonging to a wider professional community. This is clearly illustrated by several participants' comments.

> *My benefit today is supportive conversations with colleagues, support and feeling of a safe shoulder.*

> *(…) Although online, a colleague's shoulder is, nevertheless, an important support mechanism.*

Considering the fact that the events were attended by participants from different schools, belonging to a wider community of education professionals is promoted in this way.

> *I appreciated the fact that today I had the opportunity to talk with colleagues from other schools and share experiences, (…) and obtaining the feeling that we are all searching for solutions.*

Although such a benefit appears in the answers of only 50 participants, it is important to emphasise that the participants of the event also indicate as a benefit that they have strengthened their belief that the cooperation of teachers is a solution to common challenges. This is especially important in the context of Latvia, where teachers have started the implementation of the improved curriculum in conditions where all teaching aids and methodological materials are not available, thus there is also a greater risk of encountering various types of professional challenges.

> *I appreciate that by putting our heads together we can achieve much more. Thank you! Cooperation and optimism – my benefits from these events.*

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In conversations with my colleagues, I found out that [our] problems are similar and together [we] can solve a lot.

The different benefits from participating in these collaborative events can be explained by the fact that the events were devoted to different topics and content issues, and in each of them different formats of teacher collaboration were used. Thus, for example, in one of the events, teachers jointly created thematic plans for the implementation of the curriculum, while in another, they shared their personal examples of good practice in connection with the implementation of the improved curriculum. This means that teachers' answers about the benefits of participating in these activities could depend on what their individual goals of the participation have been and whether they have met their learning needs during the collaboration with other colleagues.

On the other hand, one of the main risks for the professional development of teachers in this format was the learning interdependence of the teachers, because the learning outcomes for individual teachers were directly dependent on the involvement of other participants, their desire to cooperate and share their experiences and materials. There was also a risk that not all the participants have had relevant prior professional experience in the topics discussed during these events, thereby limiting the learning opportunities and potential benefits for other teachers.

Conclusions

The interest of teachers in participating in informal professional development activities online is high, as evidenced by the number of applications received for participation in the "Emergency Methodological Assistance" cooperation events organised by the Friendly Appeal Cesis State Gymnasium. This could be explained by the fact that, in the context of the pandemic caused by COVID-19 and the introduction of the improved curriculum, teachers in Latvia require additional support from other professionals who face similar challenges.

Specific ideas for their work as well as the possibility to share their own professional experiences with colleagues are mentioned as main gains by participants of the "Emergency Methodological Assistance" events. This indicates that this form of learning is a way for education professionals to learn from their own and others' experiences, gain the ideas tested in the practice for improving professional performance, and meet their individual learning needs. Furthermore, the participants emphasise the importance of collaboration with other professionals in solving common problems and thus formation of a sense of community.

The results of this study show that informal professional development, implemented online, can provide an opportunity for education professionals to get to

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know colleagues from other schools and learn from their experiences. As a result, this format of professional development has the potential to influence not only teacher performance, but also attitudes and beliefs because data of the research shows that one of the benefits for teachers from participating in the "Emergency Methodological Assistance" events have been a sense of belonging to the wider professional community. Among other benefits of participation in the "Emergency Methodological Assistance" events, participants mention a strengthened belief that professional development is necessary, and cooperation is an effective solution towards solving the common challenges that teachers face when performing their daily duties.

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Professional Autonomy as a Cornerstone for Effective Professional and Social Activity

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ABSTRACT

Current challenges in the labor market associated with rapid globalization, digitalization, and skills gaps, cause features such as a learning community, opportunities for collaboration, student self-efficacy, social skills, coherent intercultural communication, and self-realization to play a significant role in students' professional development. Successful interpersonal and social participation in society as well as skills such as independence, self-confidence, decision-making, openness to change, and responsibility, which are emphasized in the definition of professional autonomy, are also fundamental to their development.

To prepare university students for the labor market, it is necessary to consider the above and develop students' professional autonomy to close the gap between students' theoretical learning and the development of practical professional pursuits. Despite the importance of professional autonomy, its concept in educational sciences is not sufficiently defined and described, as it lacks a theoretical basis. For that reason, this research aims to study the etymology of professional autonomy, the typology of professional autonomy, and how professional autonomy is measured in higher education by conducting a systematic literature analysis.

The results of this study reveal divergent definitions of professional autonomy, the scope of its concept, and explain the applicability of tools for measuring professional autonomy in higher education. Additionally, it identifies three levels of professional autonomy: general, collegial, and individual.

Keywords: Higher Education, Interpersonal Skills, Professional Autonomy, Social Skills, Systematic Literature Analysis

Introduction

UNESCO's latest education policy document, *Reimagining our Futures together A new Social Contract for Education,* among the proposals for the renewal of

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education, mentions the need to expand the professional aspects of learning, seeing it as a common goal, recognizing the work done by teachers and recognizing that they are creators and central figures of knowledge in educational and social transformation. Teamwork and cooperation are the main characteristics of teachers' work. Reflection, inquiry, and the creation of knowledge and new teaching methods must become integral aspects of teaching (UNESCO, 2021). This means that teachers' autonomy and freedom of action must be supported and that educators must actively participate in public discussions and dialogue about the future development of education.

Given current challenges in the labor market associated with rapid globalization, digitalization, and skills gaps, features such as a learning community, opportunities for collaboration, student self-efficacy, social skills, coherent intercultural communication, and self-realization play a significant role in students' professional development. To prepare university students for the labor market, it is necessary to consider the above and develop students' professional autonomy to close the gap between students' theoretical learning and the transfer to professional pursuits (Skills development and employability in Europe, 2016).

In Latvia, professional autonomy is one of the quality monitoring indicators of the quality of higher education, and the implementation and evaluation of professional autonomy as a result of study in the study process is considered a serious and challenging task for further research to ensure the quality of higher education (Rubene et al., 2021).

For that reason, this research aims to study the etymology of the concept of professional autonomy, the typology of professional autonomy, and how professional autonomy is measured in higher education by conducting a systematic literature analysis.

Methodology

A systematic review was conducted in five phases by Xu Xiao and Maria Watson (Xiao, Watson, 2019). The first phase included searching the literature in the University of Latvia database Primo. The keywords were selected by the researchers based on their knowledge of the field and the results of the search conducted. Originally, studies were selected using keywords: professional autonomy, professional autonomy in higher education, and student professional autonomy.

All Searches were restricted to full-text articles that were published between 2017 and 2020 in English and Latvian . The search procedure was conducted using the Primo database with the specified keywords. A total of 25 potential articles were found.

Within the second phase, based on the analysis of abstracts, each article was verified to determine if it should be included for data extraction and analysis.

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The criteria for inclusion and exclusion were established so that the research units met the requirements and articles could be included or excluded from the study (see Table 1).

Table 1. Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Studies in the English and Latvian languages.	Studies in other languages.
Education/higher education field	Other fields
Definitions of measurement of professional autonomy	No definition or measurement provided
Scientific articles, reviews or books, monographs.	Conference review, Conference paper.

After careful review, a total of 5 studies were excluded for different reasons. (For instance, if there was no definition provided, if the full text was not available, or only the abstract was available, and if the articles were in languages other than English). In general, 15 studies from the initial search were included in the next step of the full-text inquiry.

To obtain a complete list of literature, a backward search was conducted to point out the articles' most cited studies or research units using the list of references (Webster, Watson 2002; Xiao, Watson, 2019). This search resulted in the identification of 3 more articles, expanding the search criteria – the year of publication of scientific articles (one article from 1987, a second from 2003 and a third from 2011) and the field of articles (as the origin of the term "professional autonomy" derives from the field of nursing (medicine)).

Results

In the third phase of the study, after screening for inclusion, the full texts of of the studies were derived for quality assessment in order to refine the full-text articles.This was the final step in preparing studies for data extraction and analysis (Xiao, Watson, 2019). The research was conducted on articles published-between 2003 and 2020 (and one article in 1987) from the following countries: Portugal, Finland, India, Netherlands, Japan, Sweden, and Iran, which emerged as a result of the data analysis of 18 research units.

In the fourth phase – data extraction or characterization of the studies was carried out (Xiao, Watson, 2019). From each study, information was extracted and divided into research areas or categories by an inductive method. After careful reading of the literature units, four thematic categories were developed:

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Table 2. Thematic categories of systematic review

Thematic category	Authors
Professional autonomy in medicine	WMA, 2017 Schutzenhofer, 1987 Hara, Asakura, K., Asakura, T., 2020 Delshad, Belkrouz, Masoumeh 2019; Salvatore et al., 2018 Gobbi, Caunonen, 2018; Seetoodegan et al., 2019
Professional autonomy in teacher education	Han, 2014; Puaca, 2020 Carvalho, Diogo, 2017 Wagenaar, 2018
Measuring professional autonomy	Wagenaar, 2018 Schwimmer, Maxwell, 2017
Division of professional autonomy	Lundstrom, Holm, 2011 Frostenson, 2015 Evetts, 2003 Svensson, 2008 Wermke, 2013

The main features of the thematic inductive analysis were applied to analyze the content of the given articles, dividing them into four categories.

The first category looked at the definition of professional autonomy in the field of medicine, where the concept of "professional autonomy" has been known in theoretical discourse since 1987 when the Madrid Declaration on Professional Autonomy and Self-Regulation of the World Medical Association was signed (WMA, 2017), which states that professional autonomy is a quality that confirms the ability to be independent, self-determined, self-directed in decision-making, flexible, endowed with life force (resilience) when performing one's professional activity.

From analyzing the genesis of the concept, it can be concluded that professional autonomy has been studied in medicine most often, and that medical publications are the first to describe its assessment in the study process (Schutzenhofer, 1987). One of the definitions considers professional autonomy as the freedom of professional participants to determine the nature of professional work in terms of its formal content, quality criteria, formal education, control mechanisms, ethics, etc. (Hara, Asakura, K., Asakura, T., 2020).

Another definition in the medical field emphasizes that professional autonomy, as an integral part of the medical profession, refers to self-control, independence, and the ability to use clinical decision-making and clinical assessment of patient care within the scope of the individual's profession, while also taking into account the relevant work rules and regulations (Hara, Asakura, K., Asakura, T., 2020). Three dimensions of professional autonomy are identified in medical

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research: clinical or professional freedom of work (includes the doctor's ability to decide about patient care), social and economic independence of work (the doctor determines, for example, the workload, which is largely influenced by institutional arrangements) and influence on organizational decisions (the doctor has the opportunity to affect the functioning of the hospital). The relationship between professional cooperation and professional autonomy is emphasized, in which decision-making and taking responsibility for decisions are essential. The level of skills is highlighted as a determining factor in making these decisions (Delshad, Belkrouz, Masoumeh, 2019; Salvatore et al., 2018).

One of the fields of medicine in which professional autonomy has been studied more and more in recent years is nursing education (Gobbi, Caunonen, 2018; Seetoodegan et al., 2019), where it is called a complex concept and the basis of professionalism, the professional right to act autonomously within the framework of duties and working conditions (Seetoodegan et al., 2019). In addition, professional autonomy includes the right to make independent decisions. Additional indicators of professional autonomy include critical thinking, clinical decision-making, discretion and self-manage, specific personality traits, job satisfaction, and teamwork. The degree of nurses' autonomy is related to their level of knowledge and education, as well as aspects of life experience, confidence, and sociability (Seetoodegan et al., 2019).

In the second category, professional autonomy was also considered in studies related to teacher education, and in this area, the need for interaction and ensuring successful intercultural communication in the classroom is revealed, creating a unique environment supporting self-realization and autonomy in which the teacher assumes the role of coordinator, collaborator, advisor, mediator, inspiring supporter – a role that stimulates the possibilities and creativity of students and helps ensure quality education (Han, 2014; Fallah, Gholami, 2014). Researchers emphasize that developing teachers' professional autonomy requires further education, including learning new skills for implementing innovative and creative methods (Puaca, 2020).

The study of professional autonomy shows that it is a multidimensional concept closely related to institutional autonomy. It determines the right of professionals to act autonomously within the framework of specific duties or work rights, which, of course, does not exclude opportunities for cooperation with colleagues. The main characteristics of professional autonomy are the individual's ability to make independent and responsible decisions, the ability to think critically, freedom of opinion, possession of knowledge, skills, and attitudes, all of which are based on the individual's education and personal characteristics and affect their professionalism. Several studies describe the conditions for promoting students' professional autonomy. It is emphasized that teachers need to be professionally autonomous before they teach it to students. Therefore, it is

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vital to provide lecturers with opportunities to conduct self-analysis and self-evaluation of their professional activities to reveal their personal and professional potential, develop lecturers' analytical and critical thinking skills, as well as the skills to make choices in the context of uncertainty or incomplete information. It is also necessary for lecturers to stimulate cooperation and collective action both in the educational environment of the university and outside it, as well as to promote their involvement in various innovative practices. It is emphasized that it is necessary to formulate guidelines for developing the professional autonomy of lecturers (Carvalho, Diogo, 2017).

On the other hand, in promoting the development of students' professional autonomy, the learning community, the opportunities for cooperation between teaching staff and students, as well as the promotion of students' self-efficacy, it is possible to close the gap between students' studies and the development of professional activities, which is of great importance. Clearer cooperation between educational institutions and internship centers is needed to help students identify opportunities for professional development. To connect theory and practice, it is necessary to create professional development centers for students, which would help young professionals to reduce possible institutional and bureaucratic obstacles (Carvalho, Diogo, 2017).

University of Groningen professor Robert Wagenaar emphasizes the need to promote civic, social, and cultural participation to prepare students for active social representation and involvement in the labor market. Therefore, it is essential to improve students' social competence by understanding the generally accepted codes of conduct and norms of behavior in different societies and environments, for example, distinguishing between personal and professional spheres at work and civic competence, which is related to the ability to function effectively in public space with others and show solidarity and interest in solving problems, which in turn affects local and broader society (Wagenaar, 2018).

It can be inferred therefore that the promotion of professional autonomy is relevant for both students and teaching staff. However, to promote professional autonomy, it is necessary to improve the social and civic competence of academic communities.

The third category shows the assessment of professional autonomy in the process of studying , where the Comparing Achievements of Learning Outcomes in Higher Education in Europe (hereinafter CALOHEE) framework should be mentioned. This includes areas of civic, social, and cultural involvement with four dimensions:
1) society and culture,
2) information and communication processes,
3) management and decision-making processes,
4) ethics, norms, values, and professional standards.

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Each domain includes characteristics of knowledge, skills, autonomy, and responsibility. The last part corresponds to the assessment of professional autonomy, as it contains indicators describing professional autonomy. For example, the CALOHEE Reference Framework for Civic, Social and Cultural Engagement (which emphasizes a problem-solving learning approach, practical action, and responsibility for promoting professional development (Wagenaar, 2018).

The CALOHEE framework was developed to conduct assessments, or tests, to assess the quality and relevance of curricula. The comparative evaluations are based on the CALOHEE multidimensional evaluation model, which distinguishes between knowledge (theory and methodology, use of knowledge and skills), preparation for the labor market, civic, social, and cultural involvement, and professional field evaluation system.

The framework offers a new tool for understanding, defining, and visualizing curriculum requirements. They cover the fields of study in construction (engineering), teacher education (social sciences), history (humanities), nursing (health care), and physics (natural sciences). Assessment frameworks show in detail which competencies are formulated as learning outcomes and providing valuable indications about the respective fields of study – not only the content of basic knowledge, including theory and methodology, but also the skills for developing and using this content, as well as the level at which the graduate will be able to function meaningfully in his profession and society as a whole . It differentiates between first and second-cycle degrees (Bachelor's and Master's degrees) in the professional field, showing the links between the levels of learning to be developed. The assessment framework includes tables containing indicators covering the categories 'knowledge', 'skills,' 'autonomy,' and 'responsibility' according to the European Qualifications Framework for Lifelong Learning (Wagenaar, 2018).

CALOHEE's highest level of study is characterized by the "autonomy and responsibility" descriptor, which is based on knowledge and skills acquired and practiced within the process of studying. The description of autonomy and responsibility ('broader competence') can be compared to the 'competency framework' used by employers. Such a system describes which competencies are desirable for an employee in a particular profession and which can be applied in practice.

Regarding the last category – the division of professional autonomy – it is stated in research that it can be divided into at least three categories – General professional autonomy, which refers to the frames of professional work with regard to the organization of the school system, legislation, entry requirements, teacher education, curricula and procedures, where professional autonomy implies organization of teachers' work.

Meanwhile, Collegial professional autonomy in the teaching profession concerns the teachers' collective freedom to influence and decide on practice at the local level (Svensson, 2008; Wermke, 2013). Collegial autonomy may be

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generated through two different processes. It may be seen as the delegated and preferred principle for organizing work from a managerial perspective, or it may be seen as the collegial outcome of individual autonomy, where the preferences of individual teachers result in collegial action and decisions. Individual autonomy may be understood as the individual's opportunity to influence the contents, frames, and controls of teaching practice (Krejsler, 2005). This includes the choice of teaching materials, methodological decisions on temporal and spatial conditions of work, and the influence of the evaluation systems of professional teaching practice (Frostenson, 2015).

The above-mentioned factors mean that employment can range from research and analytically oriented positions to practical realization; the required skills will change but will be related to general competencies concerning the structure of the professional work (Lundstrom, Holm, 2011). Regarding the level of practice, which includes collegial and individual autonomy, the former reveals issues related to professional knowledge, control, and organization of professional work (Evetts, 2003). On the other hand, individual autonomy shows that the sphere of activity and decision-making related to the professional practice of each individual is essential (Frostenson, 2015).

Finally, when evaluating professional autonomy, it is necessary to take into account the three levels of autonomy mentioned above (general professional autonomy, collegial professional autonomy, and individual professional autonomy), showing that professionalism is influenced by the institution, management, and colleagues, as well as by one's professional practice as was described in the fourth category of the thematic analysis.

Discussion and conclusions

In analyzing the genesis of the concept, it should be concluded that professional autonomy has been studied in medicine most often, and that publications in medicine are the first to describe its assessment within the process of studying.

The study of professional autonomy shows that it is a multidimensional concept closely related to institutional autonomy. It determines the right of professionals to act autonomously within the framework of specific duties or work rights, which, of course, does not exclude opportunities for cooperation with colleagues.

The main characteristics of professional autonomy are the individual's ability to make independent and responsible decisions, the ability to think critically, freedom of opinion, possession of knowledge, skills, and attitudes, which are based on the education and personal characteristics of the individual – all of which affect their professionalism.

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On the other hand, in promoting the development of students' professional autonomy, aspects such as the learning community, the opportunities for cooperation between teaching staff and students, as well as the promotion of students' self-efficacy, can close the gap between students' theoretical studies and the development of professional activities. To link theory and practice, it is necessary to create professional development centers for students, which would help young professionals to reduce possible institutional and bureaucratic obstacles.

In the assessment of students' professional autonomy, it is possible to provide opportunities for lecturers to conduct self-analysis and self-evaluation of their professional activities by developing guidelines for the development of the professional autonomy of lecturers and students, which means that the civic, social, and cultural aspects of the field must be purposefully integrated into the study programs.

The assessment of professional autonomy should take into account four dimensions:
1) society and culture,
2) information and communication processes,
3) management and decision-making processes,
4) professional and research ethics, norms, values, professional standards and its three degrees of professional autonomy: general, collegial and individual.

Study program evaluation tools can be used to assess professional autonomy, with professional autonomy being given the highest rank, as it proves that the student can use the knowledge and competencies acquired at the university in his professional activity. Professional autonomy can be measured using self-assessment questionnaires, in which respondents have the opportunity to assess their professional autonomy characteristics using a Likert scale.

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Teachers' Emotional Burnout, Psychological Detachment from Work and Self-Reported Health During the COVID-19 Pandemic

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ABSTRACT

The outbreak of the COVID-19 infection has created unprecedented changes in the education system. The emotional burnout of teachers increased during the pandemic, unfavourably affecting their physical and mental health. In this context, teachers' ability to psychologically detach themselves from work to recharge is of special relevance. Research about the quality of teachers' professional life and emotional burnout during the pandemic is not sufficient. Therefore, the aim of the current research is to investigate the relationship between teachers' emotional burnout, their psychological detachment from work, and self-reported health during the pandemic, involving teachers working both face-to-face and remotely.

The sample consisted of 506 teachers, with the majority aged from 2–64 years, of whom 472 were female and 34 were male. Of these, 269 teachers worked mainly face-to-face, whereas 237 worked in a hybrid form or mainly remotely. Data were collected from October to December 2021 during periods of varying restrictions due to the COVID-19 pandemic. The respondents completed the Teachers' Burnout and Teachers' Self-Perceived Health scale, designed for the Erasmus+ project "Teaching to Be: Supporting Teachers' Professional Growth and Wellbeing in the Field of Social and Emotional Learning", and the Psychological Detachment from Work scale. It was found that higher emotional burnout in teachers is related to a lower ability to detach themselves psychologically from their work. Moreover, teachers with higher emotional burnout reported lower health indicators. Comparing data from teachers who worked face-to-face and those working mixed or remotely, differences were found in their levels of emotional burnout; specifically, teachers who worked face-to-face reported higher burnout. These results have practical implications supporting the necessity to promote teachers' mental health and wellbeing in their workplaces.

Keywords: burnout, COVID-19, pandemic, psychological detachment from work, self-reported health, teachers

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Introduction

The outbreak of the coronavirus (COVID-19) pandemic in 2019 and its continuation have created unprecedented challenges for the education system and the work of teachers in general. It has been estimated that COVID-19-related difficulties have affected 63 million teachers and 117 million students worldwide (Giannini et al., 2021; UNESCO, 2020), and the pandemic is still continuing. The social distancing practices that were introduced and the closing of schools significantly changed the organization of the learning process and the everyday lives of educational institutions, teaching staff, students, and their parents (Ferri et al., 2020; Herman et al., 2021; Sokal et al., 2021). The latest research highlights the negative aspects of the pandemic crisis, such as fatigue from the protracted situation and the continuation of uncertainty, as there is no point of reference when and whether the situation in the field of education will return to that of the pre-pandemic period. Uncertainty can create and/or maintain additional work stress and adaptation disturbances and increase the burnout risks of those involved in the situation (Chan et al., 2021; Kazlauskas & Quero, 2020; Reynolds et al., 2021).

The teaching profession belongs to those areas of professional activity that are associated with a high risk of emotional burnout (Mahoney et al., 2011; Marcionetti al., 2018), and recent research suggests that teachers' stress and burnout may have increased significantly during the pandemic (Allen et al., 2020; Chan et al., 2021; Reynolds et al., 2021). The pandemic is still continuing, and there is simultaneous uncertainty regarding the future, causing chronic fatigue from crisis management over a long period of time, which does not raise hopes that work tension will decrease soon and that there will be an opportunity to recover from the situation (DiStaso & Shoss, 2020; Kazlauskas & Quero, 2020). Taking this into account, there is a significant need to focus on strengthening teachers' wellbeing and search for protective factors against emotional burnout (Herman et al., 2021). Recent research has targeted teachers' health issues as a consequence of burnout (Collie, 2021; De Clercq et al., 2021), while their ability to distance themselves psychologically from their work, thus balancing the professional and personal aspects of their lives, has been recognized as a protective factor.

Studies have shown that creating psychological distance from work – the ability to rest without performing work-related activities outside working hours and without thinking about work – reduces work stress and burnout and acts as a protective factor against burnout (Fritz et al., 2010). It provides employees with opportunities to reduce the symptoms of work stress and recharge the emotional and physical resources spent during working hours, thus increasing their psycho-emotional wellbeing and work quality indicators in general (Gerber et al., 2020; Ouyang et al., 2019; Sonnentag et al., 2017). Studies using samples

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of teachers have found that the experience of psychological distancing significantly reduces the damage caused by emotional burnout (Klusmann et al., 2016; Yang & Hayes, 2020).

Although many studies have been carried out on the emotional burnout of teachers, less research has been done on the relationship of teachers' burnout with variables characteristic of the pandemic conditions (Yagil, 2020). The practical usefulness of research carried out in the context of the pandemic can be attributed both to the assessment of the quality of teachers' working life and to the clarification of protective factors in order to reduce the risk of emotional burnout.

The term "emotional burnout" is described in psychology as a condition in which chronic work stress has reached a level at which an individual experiences emotional exhaustion, depersonalization and a sense that his or her personal abilities have decreased (Aluja et al., 2005; de Beer & Bianchi, 2019; Kim & Burić, 2020; Maslach et al., 1996; Yang & Hayes, 2020). Particular emphasis is placed on emotional, physical and mental exhaustion (Petitta & Jiang, 2020), which is characteristic mainly of those working in the social sphere and occurs in situations of prolonged emotional overload (Maslach et al., 1996; Schonfeld et al., 2019).

Emotional burnout is facilitated by a working environment with a high intensity and a low support system (Ogińska-Bulik & Michalska, 2021). Dimensions of burnout such as depersonalization and diminished personal accomplishment are commonly used in psychological research to determine emotional burnout rates in different samples (Guthier et al., 2020) because they are related to negative effects on an individual's psychological wellbeing and health, work achievements, ability to distance themselves from work, absenteeism, and even their departure from the profession (Burgess et al., 2020). Emotional exhaustion reduces productivity and effectiveness and is associated with interpersonal and family life problems, an inability to detach from work out of hours and insomnia (Cordes, 2021; Estevez Cores et al., 2021; Klusmann et al., 2016; Warren et al., 2013).

Depersonalization is characterized by cynicism and a tendency to treat others negatively, intolerantly and formally to protect one's own internal resources from the consequences of emotional exhaustion by being less involved in work (de Beer & Bianchi, 2019; Schonfeld et al., 2019). The underestimation of personal achievements is related to a sense of incompetence, a sense of guilt for feeling negative at work and dissatisfaction with belonging to one's profession (Aluja et al., 2005; de Beer et al., 2019; Schonfeld et al., 2019; Taris et al., 2001). Both of these aspects can significantly hinder the quality of work of a teacher as well as negatively affect the health of an individual (Almen et al., 2020). If stressful situations at work are frequent and long-lasting, they contribute to the development of chronic conditions such as anxiety and depression that lower one's quality of life (Collie, 2021; Schonfeld et al., 2017).

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The research shows high rates of emotional exhaustion and depersonalization in samples of teachers because their work includes specific tasks – responsibility for the educational process of students and its management – in addition to maintaining intensive interactions with different groups, including colleagues, the school administration, and students and their parents (Kim & Buric, 2020; Mahoney et al., 2011; Marcionetti et al., 2018). Students benefit from their teachers' ability to raise their interest and provide support in the learning process, parents would like to get an individual approach for their child, while the school administration requires high levels of achievement and successful classroom management (Kim & Buric, 2020; Pas et al., 2010; Philipp & Schüpbach, 2010).

In the context of distance learning during the COVID-19 pandemic, such work-related resources as a predictable working environment, close cooperation with colleagues, and positive feedback in the workplace are limited (Collie, 2021). There are also technological, pedagogical and social challenges to distance learning, such as the availability of technological devices and the internet and the necessity of parental involvement in their children's learning (Martinsone & Stokenberga, 2021). Pedagogical challenges may be related to the digital competence of teachers, the need to adapt teaching materials to remote learning, and providing positive feedback to ensure that students have learnt the subject's content and stayed motivated (Chan et al., 2021; Ferri et al., 2020). This also entails the time needed to prepare for the online learning process, which creates a risk of additional workload and emotional burnout (Kersten et al., 2021).

Recent studies confirm that the pandemic has had negative consequences on the wellbeing of teachers and pupils and on the quality of learning indicators in general (Chan et al., 2021; Ferri et al., 2020; Herman et al., 2021; Hilger et al., 2021). An additional stressor was related to teachers' concerns about their health and fear of becoming infected with the virus (Pressley et al., 2021). Finally, teachers' workload increased due to the need to replace colleagues who were ill or left their jobs during the pandemic. Taking the experience of the difficulties with the distance learning process during the initial period of the pandemic into account, maximum efforts are currently being made to ensure the learning process remains face-to-face. During the pandemic, three forms of organization of the learning process could be conditionally distinguished: on-site learning/face-to-face, where groups of classes were physically and socially distanced; remote/online learning; and the so-called hybrid form of learning, where the process took place both face-to-face and remotely (Pressley et al., 2021). These forms of educational organization altered in a natural and sudden manner in response to the dynamics of COVID-19 infections spreading in the country or within the framework of the illness and quarantine status of a particular class, teacher or pupil being determined. Nevertheless, little research has been done on teachers' wellbeing in the context of hybrid learning, which will be addressed in this study.

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At the same time, scientific studies have concluded that remote work has reduced the preservation of a healthy relationship between working and non-working life boundaries, reducing the chances of restoring resources after work (Kossek et al., 2021). Studies have shown that the greater the stress of work has been on a working day, the more time is needed for rest, so the balance of work life and out-of-work life is vital to restore the energy lost during a working day (Karabinski et al., 2021; Schulz et al., 2021). Psychologically distancing oneself from work – the ability to rest from work without performing work-related activities outside working hours and without thinking about work – is a recovery strategy (Fritz et al., 2010; Sonnentag & Fritz, 2007). The concept includes not only a physical absence from work and not performing work-related activities during out-of-work hours but also the ability to disconnect mentally from work and stop thinking about work-related problems (Schulz et al., 2021), thus restoring resources (Hobfoll et al., 2018). Psychologically distancing oneself from work has also been shown to increase an employee's wellbeing and reduce the risk of emotional burnout (Bennett et al., 2016; Ouyang et al., 2019; Sonnentag & Fritz, 2007; Sonnentag et al., 2017). It has been found that the experience of psychological distancing significantly reduces exhaustion and emotional emptiness, and therefore teachers who use individual strategies and distance themselves from work are better able to reduce the risk of burnout and health problems (Ebert et al., 2015; Fritz et al., 2010).

Based on this brief review of the literature and taking into account the aim of the study to find out the relationship between the indicators of emotional burnout of teachers, their psychological detachment from work, and their self-reported state of health in the context of the COVID-19 pandemic, the following research questions were posed:

1. What is the relationship between the indicators of teachers' emotional burnout, their psychological detachment from work, and their self-reported state of health?

2. Are there differences in levels of emotional burnout, psychological detachment from work and self-reported health between teachers who work face-to-face and teachers working remotely or in a hybrid form of learning?

3. How do teachers' psychological detachment from work and self-reported health explain the variation in teachers' emotional burnout, controlling for their demographic indicators and the form of learning employed during the COVID-19 pandemic?

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Methodology

Study participants

Five hundred and six teachers teaching at the elementary, primary and secondary school stages of general and vocational education institutions in Latvia participated voluntarily in this study, with the majority being between the ages of 21 and 64 (11% were aged 21–29; 34% were 30–44; 33% were 45–54; 19% were 55–64; and 3% were 65 and over). Women made up 93% of the sample ($n = 472$), and men made up the remaining 7% ($n = 34$). In terms of location, 269 teachers worked mainly face-to-face where measures were put in place to limit COVID-19 infection, and 237 worked remotely or in a hybrid form. Analyzing the indicators of teachers' total work experience, it can be seen that 30% of respondents' work experience is 26 years or more, 17% had worked as a teacher for 21–25 years, while 18% had working experience of just 1–5 years. According to the information provided by the respondents about their workload, 455 teachers (90%) were employed full-time, while 51 (10%) worked part-time.

Instrumentation

To indicate the rates of teachers' emotional burnout and self-reported health, the Erasmus+ project's "Teaching to Be: Supporting Teachers' Professional Growth and Wellbeing in the Field of Social and Emotional Learning" developed questionnaire was used.

The nine claims of the Teachers' Burnout Scale measure teachers' emotional burnout. Each statement is evaluated on a Likert scale from 1 to 6, where 1 is "Completely agree" and 6 is "Completely disagree". The scale includes three subscales of emotional burnout assessment: emotional exhaustion, depersonalization and diminished personal accomplishment. The sum of all subscales indicates the level of burnout of the respondent, but the sum of each subscale indicates the specific burnout dimension, and the higher the sum of the scale and subscales, the more pronounced the respondent's burnout rates.

On a scale to self-report their health, teachers performed a subjective assessment of their health in response to individual statements on a Likert scale from 1 to 5, which was rated as follows: 1 – bad, 2– medium, 3 – good, 4 – very good, and 5 – excellent. The sum obtained on the scale indicates the level of self-reported health of the respondent, and the higher the sum, the more positive the self-assessment of the respondent's health.

The Psychological Detachment from Work scale was used to determine the teachers' psychological detachment from work (Sonnentag & Fritz, 2007; in 2016, Berga adapted the survey for use in Latvia). The scale measures the level of psychological distancing with four statements on a Likert scale from 1 to

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5, where 1 is "Completely disagree" and 5 is "Completely agree". The level of psychological distancing is obtained by summing up the self-assessment scores and dividing it by the number of statements (arithmetic mean), and the higher the sum, the more pronounced and positive the psychological distancing of the respondent from work is.

The survey of teachers' demographic data included questions about their gender, age, experience of pedagogical work, workload, and the way in which the teaching/learning process took place in the last month (face-to-face, mainly remotely, remotely, and face-to-face).

Procedure

The research data were collected from October to December 2021 when, due to the measures intended to contain the spread of COVID-19 infections in Latvia, both the learning process and the work of teachers were undertaken in all three formats: face-to-face, remotely, or in a hybrid form. When respondents were asked to participate in the survey, they confirmed their informed consent to participate voluntarily in the study. The survey was carried out using Google Forms. A link to the questionnaire was sent to various e-mail addresses of Latvian educational institutions or to the directors of educational institutions, who then forwarded the information to teachers and invited them to participate in the study anonymously and voluntarily. An additional link to the survey was posted in several teachers' discussion groups on social networks. The participants were informed that the study would be kept confidential and that the data obtained would only be used in the aggregate. The data collection was carried out individually and without a time limit.

The design of the study is a correlated cross-cut study. The obtained data were collected in Excel and then exported to and processed in SPSS v.26.0.

Results

The data on the reliability indicators of the surveys used in the study and the empirical distribution of the data obtained are summarized in Table 1 and show that the overall internal coherence indicators of the scales are very good or excellent. Since the indicators of scales and subscales do not correspond to a normal distribution, non-parametric statistical methods were used for further calculations.

After evaluating the averages of the study variable values, it can be concluded that the overall burnout rate of the teacher sample (M = 3.98) is above average and indicates a trend of emotional burnout. Overall, the average rate of psychological detachment from work ($M = 2.62$) shows a positive trend, which indicates an above-average psychological distancing of teachers from their work.

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Table 1. Reliability indicators for the burnout scale and its subscales, self-reported health scale, and psychological detachment from work scale (n = 506)

Variable	M	Min.	Max	SD	a	K-S
Burnout (total)	3.98	1	6	1.17	0.95	0.07*
Emotional exhaustion	4.43	1	6	1.22	0.87	0.12*
Depersonalization	3.85	1	6	1.36	0.91	0.12*
Diminished personal accomplishment	3.66	1	6	1.32	0.86	0.09*
Self-reported health	2.38	1	5	0.73	–	0.29*
Psychological detachment from work	2.62	1	5	1.08	0.94	0.11*

*p ‹ .05

Teachers' self-reported state of health (M = 2.38) is slightly below average, as evidenced by the most frequent answers provided by teachers, 51% of whom described their health condition as average and 36% as good.

A correlation analysis was carried out to determine the relationship between the indicators of the emotional burnout of teachers, their psychological detachment from work, and their self-reported state of health (see Table 2).

Table 2. Spearman correlation coefficients between the burnout scale and its subscales, self-reported health scale, and psychological detachment from work scale

Variable	Self-reported health	Psychological detachment from work
Burnout (total)	−0.46**	−0.36**
Emotional exhaustion	−0.41**	−0.43**
Depersonalization	−0.42**	−0.32**
Diminished personal accomplishment	−0.38**	−0.25**
Self-reported health	–	0.36**
Psychological detachment from work	0.36**	–

N = 605; ** *p ‹ .01*

Looking at the relationship between teachers' burnout and self-reported health, it was concluded that self-reported health indicators presented significantly negative results that correlated with the burnout scale and its subscale indicators. This demonstrates that the increase in burnout rates leads to a reduction in teachers' self-reported health as a positive construct.

In terms of the relationship between teachers' burnout and psychological detachment from work, it can be concluded that psychological detachment correlates negatively and significantly with burnout; in other words, the lower the

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assessment of psychological detachment, the higher the burnout rates. The correlation between the subscale of emotional exhaustion and psychological detachment is also statistically significant, which indicates the difficulty for teachers to psychologically distance themselves from work, causing them to suffer from emotional exhaustion. The correlation between diminished personal accomplishment and psychological detachment is statistically negative. Teachers' psychological detachment and self-reported health are positively and significantly correlated, which indicates that their ability to distance themselves psychologically from work is positively related to self-assessed health. These conclusions have also been reached in other scientific studies (Ebert et al., 2015; Fritz et al., 2010; Schulz et al., 2021; Sonnentag et al., 2017).

In order to address the differentiation in levels of emotional burnout, psychological detachment from work and self-reported health indicators for teachers working face-to-face and those working both remotely and face-to-face, Mann-Whitney tests were conducted for a comparison of independent samples (see Table 3).

The results indicate that teachers who basically work face-to-face report higher overall rates of emotional burnout, depersonalization and diminished personal accomplishment than teachers working remotely or in a hybrid form. However, there are no significant differences in the two groups' levels of self-reported health and psychological detachment from work.

A stepwise regression analysis was used to assess how teachers' psychological detachment from work and self-reported state of health predict their emotional burnout by controlling for demographic variables and form of teaching organization (see Table 4).

Table 3. Differences in levels of teachers' emotional burnout, self-reported health and psychological detachment from work by form of teaching

| | Form of teaching | | | | |
| | Face-to-face (*n* = 269) | | Hybrid and remotely (*n* = 237) | | Mann-Whitney output |
Variable	*M*	*SD*	*M*	*SD*	*U*
Burnout (total)	4,11	1,13	3.84	1,20	27841,00[*]
Emotional exhaustion	4,54	1,13	4,32	1,30	29210,00
Depersonalization	3,96	1,34	3,71	1,37	28547,00[*]
Diminished personal accomplishment	3,82	1,29	3,48	1,34	27450,00[**]
Self-reported health	2,36	0,73	2,39	0,73	31315,50
Psychological detachment from work	2,62	1,11	2,63	1,07	31486,50

*p ‹ .05; **p ‹ .01

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Table 4. Regression analysis for the dependent variable 'emotional burnout of teachers' (*n* = 506)

Predictor	B	B SE	β	t
Step 1				
Self-reported health	−0.62	0.07	−0.40	−9.49**
Psychological detachment from work	−0.24	0.04	−0.23	−5.38**
Form of teaching organization	−0.22	0.09	−0.09	−2.43*
Gender	−0.10	0.18	−0.22	−0.56
Age	−0.01	0.07	−0.01	−0.17
Work experience	−0.02	0.04	−0.04	−0.58
Marital status	−0.03	0.03	−0.04	−1.01
Workload	−0.39	0.15	−0.10	−2.55*
Step 6				
Self-reported health	−0.61	0.64	−0.39	−9.57**
Psychological detachment from work	−0.24	0.04	−0.23	−5.66**
Form of teaching organization	−0.23	0.09	−0.10	−2.60**
Workload	−0.38	0.15	−0.10	−2.60**

Note. For reasons of space, only the first and last steps of the analysis are included. In step 1, R^2 = .30, *p* < .01. In step 6, R^2 = .29, *p* < .01.

*p < .05; ***p* < .01

The results of the regression analysis show that the emotional burnout of teachers is statistically significantly predicted by lower self-reported health, less psychological detachment from work, the face-to-face form of teaching, and a full workload. These variables in the study sample explain 29% of the variation in teachers' emotional burnout (R^2 = .29).

Discussion

The results of this study mostly coincide with those of other studies. Teachers who indicate higher rates of emotional burnout assess their state of health more negatively. This is in line with the conclusions of other researchers on the relationship between emotional burnout and deteriorating health (Collie, 2021; Estevez Cores et al., 2021; Kazauskas & Quero, 2020).

The relationship between emotional burnout and psychological detachment from work coincides with the guidelines of the conservation of resources theory (Hobfoll et al., 2018), which indicates the potential for recovery from psychological detachment from work and provides opportunities to reduce symptoms related to work stress and replenish the resources spent during work. It has previously been confirmed that experience of psychological detachment from work significantly reduces the damage caused by emotional exhaustion, which, in the case of the emotional burnout of teachers, can be especially high and associated

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with negative health consequences (Ebert et al., 2015; Fritz et al., 2010; Klusmann et al., 2016). This also explains the significant correlation between psychological detachment from work and self-reported health, which shows that the ability of teachers to distance themselves psychologically from work interacts positively with their self-assessments of their health.

With regard to differences between indicators of emotional burnout, psychological detachment from work and self-reported health, the results are different from those of other scientific studies. Teachers who worked mostly face-to-face rather than in a hybrid form or remotely reported significantly higher rates of emotional burnout, particularly in the dimensions of depersonalization and diminished personal accomplishment. This result may be explained by the situation relating to the pandemic in Latvia during the collection of research data, which was characterized by high rates of infection, serious restrictions in social distancing, increasing workload due to the necessity to replace colleagues who were ill or quarantined, and additional job responsibilities that were not related to teachers' direct duties (e.g., COVID testing and monitoring the use of personal protective equipment). Finally, in parallel with working with students face-to-face, teachers needed to organize the online learning process for those students who were ill or quarantined. Some other scientific studies reached similar conclusions related to issues of uncertainty and unpredictability in the working environment, including worries about personal health and fear of contracting COVID-19, excessive workload and poorer results (Chan et al., 2021; Pressley et al., 2021; Venkatesh et al., 2021).

The comparatively higher rates of the depersonalization subscale among teachers who worked mostly face-to-face can be explained by taking into account that the depersonalization of the individual acts as a defence mechanism to protect oneself from the exhaustion of internal and external resources at work (de Beer et al., 2019; Schonfeld et al., 2019).

The significant differences between teacher groups in the diminished personal accomplishment subscale can be explained in light of the findings of other studies on the academic achievements of pupils who have declined during the pandemic, which could lead teachers to a reduced and negative self-assessment of their professional abilities (Chan et al., 2021; Ferri et al., 2020; Herman et al., 2021; Hilger et al., 2021). It should also be mentioned that teachers who carried out activities during the study period in addition to their direct duties and activities not related to their pedagogical work, such as testing students, could have experienced additional workload.

In the present sample of teachers, it was found that their emotional burnout rate was predicted by self-assessments of health and psychological distancing from work, as well as the form of organization of teaching and workload, which explained 29% of the variation in teachers' emotional burnout. These results

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are consistent with those of other studies. With regard to the job demands-re-sources model, especially in the context of the specifics of teachers' work and pandemic conditions, it can be concluded that teachers' lower self-assessed health is related to higher indicators of emotional burnout (Bakker & Demerouti, 2017). Previous studies indicate that emotional burnout rates can be attributed to various aspects of mental and physical health that significantly lower the quality of life and wellbeing of employees (Collie, 2021; Schonfeld et al., 2017). In addition, employees who do not take sufficient care of themselves and are unable to maintain a healthy balance between working life and out-of-work life have a lower ability to psychologically distance themselves from work, which could cause higher emotional burnout (Almén et al., 2020; Hetland et al., 2021).

Previous research findings show similarities with the results of this study insofar as they predict the emotional burnout of teachers, taking into account the form of organization of their work (Chan et al., 2021; Kossek et al., 2021). This study shows that emotional burnout is significantly predicted by teachers' work-load indicators; specifically, those teachers working face-to-face reported higher rates of burnout than those working remotely or in a hybrid form. The scientific literature extensively examines the impact of workload on burnout, revealing that a higher workload explains higher rates of emotional burnout (Marcionetti et al., 2018; Venkatesh et al., 2021; Warren et al., 2013).

It should be taken into account that the data for this study were obtained using self-assessment questionnaires. This creates a risk that the obtained data depend on the participants' subjective understanding of the questions, and the provision of socially desirable answers is also possible. The survey was conducted electronically, and therefore it can be assumed that the study's participants could comprise the most motivated respondents. The cross-sectional design of the study, which does not allow a conclusion of how the variables measured may change over time, could also be considered a limitation.

Overall, the findings of this study are mostly in line with the conclusions of previous studies, confirming that lower psychological distancing from work and self-assessed health are related to higher rates of emotional burnout among teachers. The comparison of teacher groups in this study provided new evidence on the possible interaction of face-to-face teaching with higher rates of emotional burnout. The study also addressed teachers' wellbeing in the hybrid teaching model, which has previously received insufficient research.

With regard to the implications of the findings, it is important to pay attention to the mental health of teachers in their professional life, firstly, by creating working conditions at a school as an institution in which psychological distancing from work is possible and supported. Secondly, one of the essential criteria for the quality of teachers' work to be considered is their ability to main-tain a balance between their professional and personal lives, as well as their

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individual responsibility to consciously invest in their recovery. It is important to continue research on promoting teachers' mental health and finding a healthy balance between their at-work and out-of-work activities in future studies.

Conclusions

This study addressed the relationship between teachers' emotional burnout, psychological detachment from work and self-reported health in the context of the COVID-19 pandemic. It was found that higher self-reported rates regarding the ability to distance oneself from work were associated with lower rates of emotional burnout among teachers. The relationship between psychological distancing from work and self-assessed health indicated that teachers' ability to psychologically distance themselves from work interacts positively with their self-assessed health. Their emotional burnout is statistically significantly predicted by their self-reported health, psychological detachment from work, the form of organization of teaching, and their workload. These factors explain 29% of the variations in the emotional burnout of teachers.

It was also found that teachers who mainly worked face-to-face indicated higher rates of emotional burnout both in general and in separate dimensions compared to those who worked remotely or in a hybrid form. This may be explained by the necessity to integrate additional activities into their everyday work, such as supporting those students who were in quarantine, replacing infected colleagues or organizing the testing of students. No differences in teachers' self-reported health and ability to psychologically detach themselves from work were found when comparing groups of teachers based on their teaching form.

This study illuminates the role of psychological detachment from work as a protective factor against emotional burnout. It also raises awareness of promoting teachers' physical and mental health, facilitating their psychological distancing from work and thus keeping a balance between teachers' professional work and their personal life. This should be considered as both an institutional obligation when organizing work and also a teacher's individual responsibility.

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The Notion of Sustainable Team Management in Educational Institution

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ABSTRACT

The article deals with one aspect of a larger scale and long-term grounded theory research to explore and define the concept of the sustainable team management in educational institution. This article seeks the answers to research questions: what constitutes the management of educational institutions, and which sustainable development initiatives are implemented in the management of educational institutions.

This article aims to explore the concept of the sustainable team management of educational institution, as well as to coin the elements of the sustainable development of organization, which could serve as a basis to improve sustainable team management in educational institution.

The data were collected by the content analysis of the sustainable team management initiatives reflected on 47 homepages of educational institutions; case studies regarding the implementation of sustainable team management in educational sector and 12 interviews with school administration on the state of the art of sustainable team management. Research sample was 59 educational institutions: 17 primary schools, 29 secondary schools, and 13 state gymnasiums with broad geographical representation – the schools in the capital city, cities, small towns, and countryside.

Sustainable team management supports principals and their teams in leading their educational institutions towards sustainability, also, achieves institutional goals and cultivates a culture where collaboration, appreciation, and teamwork are valued. According to the data of the study, the institutions insufficiently implement the sustainable development initiatives in the education management process of the educational institution that does not meet state policy and vision, also, in order to implement sustainable development initiatives in educational institutions, attract funding from Erasmus+ or other projects. There is also a lack of the uniform understanding of sustainability among the members of education management team. The authors admit that the concept of sustainable team management in an educational institution needs to be defined at the national level.

Keywords: education management, organizational performance, sustainable development of organization, sustainable team, sustainable team management

Introduction

The education sector plays a vital role in an economic, social and environmental context since it has the capacity to transform society and educate students to adapt to needs and challenges from different perspectives. Sustainable team management (STM) contains a complex of activities accompanying various stages of personal and organizational development and therefore it is necessary to create the guidelines for educational institutions to implement this change.

International Commission on the Futures of Education (2021) highlights the importance of sustainability for future education, especially in the field of education management, which includes teamwork, collaboration and culture of organization. Among the priorities, there is mentioned steering educational opportunities towards inclusion and sustainability. It also states that: "Educational institutions should unite collective endeavors and provide the knowledge, science, and innovative approach to shape sustainable futures for all anchored in social, economic, and environmental justice and prepare their teams for environmental, technological, and social changes on the horizon" (International Commission on the Futures of Education, 2021, 15).

The Sustainable Development Goals (SDGs) defined by the United Nations (UN) recognize quality education as an integral element of sustainable development (United Nations General Assembly, 2015). Although each of the 17 SDGs (169 sub-goals) is presented as a separate initiative, it should be noted that the five pillars (Environmental, Economic, Social, Political and Corporate) of sustainable development are all interconnected (Morrissey & Heidkamp, 2022). UN define that developing SDG 4 (a quality education) is the foundation to improving people's lives and sustainable development and, therefore, the education sector has a central role in the achievement of this SDG which also has a transversal impact on the rest of SDGs. So, SDG 4 (a quality education) is recognized as an essential means of achieving the other 16 SDGs (Liu & Kitamura, 2019).

The European Commission (EC) has established Eco-Management and Audit Scheme (EMAS) to integrate the SDGs into everyday life of educational institutions. EMAS is a systematic approach that ensures the actions linked to the SDGs are not isolated, but framed within a broader vision and reporting on achievements can be easily integrated also in the environmental statement. EMAS also cooperate with "UNESCO Project School" and Eco-School projects. Regardless of the type of educational institution, these organizations need to evolve and adapt in order to prepare future generations for the changing environment and societal concerns. Working within a systematic approach like EMAS provides the education sector with the necessary tools to get prepared, innovate and have a real positive impact on society (European Commission, 2022).

Present article is a theoretical concept paper based on a literature review, analysis of case studies and interviews with principals, and the authors' conceptual

work. It offers a model and seeks to support principals and their teams in leading their educational institutions towards sustainability. Also, the concept of the STM in educational institution is defined for each of the development stages, as well, a number of practical actions and management strategies are suggested and explained in detail.

According to the Law of the Education in Latvia (Izglītības likums *[Education Law]*, 1998), the quality education consists of four criteria such as goal-orientation, qualitative education, inclusive environment, and education management. Also, one of the main directions of Sustainable Development Strategy in Latvia until 2030 admits that is necessary to create new management forms according to SDGs goals (Latvijas ilgtspējīgas attīstības stratēģija līdz 2030. gadam *[Sustainable Development Strategy of Latvia until 2030],* 2010).

In 2016, the National Centre for Education of the Republic of Latvia started a project "Competence Approach to Curriculum" (Project School2030) to introduce a competence-oriented curriculum in all educational institutions from pre-school to general secondary school with the aim of promoting the acquisition of necessary skills for living in the 21st century. Project School2030 highlights the importance of team in educational institutions and the initiatives of sustainable development. The implementation of Project School2030 goals is related to significant changes in the structure of school and pre-school curriculum, the system of evaluation of learning outcomes, teacher education, and as a result, it affects the management of educational institutions (Skola2030, n.d.[b]).

This article aims to explore the concept of the sustainable team management of educational institution, as well as to coin the elements of the sustainable development of organization, which could serve as a basis to improve sustainable team management in educational institutions.

Research questions:

RQ1: what constitutes the sustainable team management of educational institutions?

RQ2: which sustainable development initiatives are implemented in the management of educational institutions?

Literature review

The term of the sustainability of organisation is used as a synonym of sustainable development or organisation's social responsibility – organisation's sustainability is based on economic, environmental, social (Bagdonienė, Galbuogienė, Paulavičienė, 2009), political and corporate responsibility aspects (Morrissey & Heidkamp, 2022).

A sustainable organisation is becoming one of the most popular and ambitious concepts because environment and organisational performance are closely related

and its long-term success depends on the fact how the organisation is able to integrate human capital into the environment (Seivwright & Unsworth, 2016; de Haan, 2010).

Sustainable team management consists of seven factors such as:

- core management strategy;
- value for both internal and external parties;
- building cross-departmental bridges;
- democratic decision-making and the motivation of the participants in the long term;
- effective teamwork – leaders and group work;
- team-building methods;
- involvement of all groups of participants (United Nations General Assembly, 2015, Warner & Elser, 2015).

Kvelde and Odina (2022) distinguish several development stages for the team to reach the status of a sustainable team in an educational institution starting from a small group of people working together and sharing common interests, then a formal and appointed team of people – administration team taking care of the management of an educational institution, followed by collective team referring to small organizations where all people are considered as a whole, sometimes also called as family team (Warr & Nielsen, 2018). The next stage would be effective team demonstrating high level teamwork and finally sustainable team working cross-departmentally and centred on adding value to organisations (Wiek, Withycombe, Redman, 2011).

Combining the five pillars of sustainable development in education is a complex process that should result in a completely new vision of educational institutions. It raises the necessity for a management structure to encourage and support the sustainability initiatives within the organisation.

Sustainable development initiatives can be classified by attributing them to sustainable development pillars (see Table 1).

For last 20 years, the most demanded sustainable development initiative for organisations is corporate sustainability and responsibility, as well, it is evaluated according to the indicators of the sustainability index.

The sustainability index is an effective management tool based on an internationally recognized methodology. It helps organisations to diagnose the sustainability of their operations and the level of corporate responsibility in their everyday management.

Table 1. The sustainable development initiatives (created by authors)

Pillars of sustainable development	Sustainable development initiative
Environmetal pillar (Mikulčić et al., 2017)	Climate change/global warming Air pollution Deforestation and desertification Rising sea levels Water scarcity Industrial waste Household waste
Economic pillar (Purvis et al., 2019)	Leadership and change Educational organisations International development Sustainable and ethical international cooperation Responsibility and ethics Population Corporate social responsibility Consumption and trade Economic globalization Economic growth
Social pillar (Murphy, 2017)	Intercultural understanding Sustainability in the built environment Sustainable communities Cultural diversity Health and well-being Peace, Security and Conflict Citizenship, Government, Democracy Human rights and needs Travel, transport and mobility Human rights Education accessibility and quality
Political pillar (Chitescua & Lixandrub, 2016)	Use of power in sustainability Effective management Fight corruption Employee evaluation, talent search Government and political transparency Business that promotes national production
Corporate pillar (Saufi e al., 2016)	Corporate environmental responsibility Corporate social responsibility

The sustainability indexes that have the largest impact and representativeness:
- in the Unites States, it is Domini 400 social index – a stock index focusing on companies that maintain high environmental, social, and governance standards (Fernando, 2022a);
- in Europe the two most popular are:
    ▸ the Dow Jones Sustainability Indexes: evaluate three spheres of action (*economic, environmental and social)* based on 24 parameters (Banco Bilbao Vizcaya Argentaria, 2019);

▶ FTSE4Good: is designed to measure the performance of companies demonstrating specific *environmental, social and governance* practices (Fernando, 2022[b]);
• in Latvia, sustainability index is measured by the Institute of Corporate Sustainability and Responsibility (ICSR). ICSR evaluates organisations according to five criteria: local community, management strategy, organisational culture, environment and work environment (Institute of Corporate Sustainability and Responsibility, n.d.).

According to the European Commission (2022), a whole-school approach involves integrating learning about environmental sustainability throughout the institution, it can also help students develop a sustainable mindset. This means that by implementing sustainability in management, teaching and learning systems, educational institutions can provide learners with consistent opportunities to practise what they learn. In order to initiate change in educational institution, there are some key objectives to reach, in particular:

1. To develop an inclusive whole-school plan involving all stakeholders – students, staff, parents, partners and community stakeholders.
2. To develop a future-oriented perspective to increase the impact of whole-school plan and student motivation.
3. To shift from environmental education to learning about sustainability, as learning about sustainability sees learners as active and engaged agents of change (European Commission, 2022).

The case study on the implementation of STM in educational sector of 27 member states the European Union shows the evidence of successful EMAS. EMAS provides a better knowledge and anticipation of the environmental context as it prepares the organization to meet new challenges and societal needs, also guides the opportunity to concrete involvement of students, employees and families (for example, the creation of eco-teams, surveys and opinion polls, gamification activities, enrolment in environmental projects/initiatives, etc.), improves the working environment and facilitates organizations willing to consider also social actions to integrate them under a common tool and have a systematic approach to sustainability (European Commission, 2022). The data of register of EMAS (data from 2020) show that:

• 448 European educational institutions, with 101.130 employees, registered in EMAS;
• 231 of registered educational institutions have implemented EMAS in the education sector;
• 134 of these organizations have less than 49 workers, 50 are medium organizations and the other 47 have a really large workforce, 25 of these large organizations have more than 1.000 employees.

With regards to the geographical distribution, Germany represents 59% of EMAS registered organizations in the education sector (137 organizations), followed by Spain (25%) and Austria (10%) with 57 and 23 EMAS registered organizations respectively. Although with a smaller presence, other EU countries also have EMAS registered organizations, such as Italy, Sweden, Belgium, Cyprus, Greece, Luxembourg and Poland. Important to mention that Latvian educational institutions are not registered in EMAS register (European Commission, n.d.).

Thereover, Foundation for Environmental Education (FEE) in cooperation with Environmental Education Foundation of Latvia, has implemented the global Eco-School programme. The Eco-School programme is one of the most comprehensive and already popular models of environmental education in the world. It is based on the competence approach and is a method that helps to achieve the expected outcomes defined in the teaching standard and curriculum, as well as the goals of environmental protection and sustainable development. (Vides izglītības fonds/ *[Environmental Education Foundation]*, n.d.).

The symbol of the Eco-School programme is the Green Flag award. Currently, more than 56,000 schools around the world are involved in the Eco-Schools programme, in Latvia they are almost 200 educational institutions, from primary schools to universities.

In order to achieve the EU's ambitious goal of becoming the first climate-neutral continent by 2050, the education sector must act and implement STM in educational institutions.

Methodology

Due to the need of exploring theoretical notions and defining the concept "sustainable team management", the research was organized using grounded theory method research design. The authors of grounded theory method, Glaser and Strauss (1967) originally introduced it to facilitate theory development that consisted of obtaining and analysing data. Bryant and Charmaz (2007, 1) describe it as a method containing "a systematic, inductive, and comparative approach for conducting inquiry for the purpose of constructing theory".

It is considered one of the most generally applied and popular qualitative research methods and is used in areas that have not been widely researched, or to acquire a new insight in previously researched areas (Mārtinsone, Pipere, 2021). In order to develop a theory, the researcher should start by defining research questions, as well as selecting participants, using theoretical sampling, followed by data collection, data analysis and validation stages. This is what the present research article also reveals as it deals with one aspect of a larger scale and long-term grounded theory research. The last stages, namely theoretical saturation stage when theoretical saturation is defined, meaning that in the development

of theory no new categories, concepts, dimensions or incidents arise and finally discovery and conclusion stage when the findings and restrictions of the research are demonstrated are not discussed in this article.

The data were collected by performing the content analysis of the STM initiatives reflected on the homepages of educational institutions in Latvia ($n = 47$), 122 homepages of educational institutions in Latvia were analysed. As it was stated before, a theoretical sampling was used as most appropriate type of sampling for the grounded theory research to select new research sites, events, activities, documents and actors to compare with those already studied. 26 percent of homepages (47 out of 122) contained information regarding sustainable development initiatives in the operation of the educational institution. The data were compared to the report presented by the EU regarding the implementation of sustainable development initiatives in the educational sector in EU ($n = 231$). Afterwards the interviews with school administration on the state of the art of STM in educational institutions ($n = 12$ principals) were carried out. As to sampling, first probability sample – simple random was applied. More than 20 invitations to participate in the interview were sent out as part of the research to principals from the different educational institutions. Answers were received only from five principals from four Latvian cities (Riga and its district, Rezekne and its district, Ventspils and its district and Limbazi and its district). Later purposive sampling was used to approach the school administration of other educational institutions in these cities that already participated in the research. The research sample consisted of three principals from each district and represented different academic levels, such as primary school, secondary school and gymnasium. Based on the principles of research ethics, the informed consent that respondents enter research voluntarily with full information about what it means for them to take part, and that they give consent before they enter the research was obtained. Before obtaining informed consent, the principles were informed about the aim, process, methods, expected benefits, potential risks and rights of research participants. They had the right to stop participating in the study at any time.

All in all, the research sample was 59 educational institutions: 17 primary schools, 29 secondary schools, and 13 state gymnasiums. Selection consisted of analysed homepages of educational institutions ($n = 47$) and the interviewed representatives of school administration ($n = 12$) – the homepages of 12 educational institutions participating in the interviews were not analysed in the research. 12 school principals represented four primary schools, four secondary schools, and four state gymnasiums, as well as geographically they were from the schools in the capital, cities, small towns, and countryside.

The content analysis was performed based on the concept of the STM in educational institution defined by Müller, Lude & Hancock (2020).

- Stage 0: Sustainability is not (yet) an issue – only individual teachers deal with SDGs topics in their lessons, no evidence on the institutional and management level;
- Stage I: Projects – SDGs topics are tackled in the lessons from time to time and there are initiatives of interdisciplinary cooperation projects (the creation of a school garden, recycling initiatives and others); education management is aware of the sustainable development activities in the educational institution;
- Stage II: System – the teaching staff regularly implements SDGs topics in the lessons and is involved in the development of teaching concepts and projects, such as the construction of a solar plant, the redesign of the school grounds, or cooperation with external partners; education management supports the sustainable development activities in the educational institution;
- Stage III: Profile – SDGs are integrated comprehensively into teaching and school life and sustainable development has been made a key issue and developed a specific, expressly communicated sustainability school profile that distinguishes the school from other schools, for instance, the certification according to a formal quality label such as, "UNESCO Project School" or the European "Eco-Management and Audit Scheme" (EMAS) or Eco-School. Education management initiates the sustainable development activities in the educational institution.

Results and Discussion

The content analysis of the STM initiatives reflected on the homepages of educational institutions and interviews with school administration: how much sustainable development constituted management initiatives integrated into educational institutions in Latvia. 59 sources of the education management hierarchy structure were examined, including 47 structures from the homepages of Latvian educational institutions and 12 from interviews with school administration.

According to Figure 1, the data of the analysis of educational institutions for the implementation of sustainable development initiatives show that 45 percent (28 educational institutions out of 59) have reached *Stage 0: Sustainability is not (yet) an issue*, because, there are little or no significant activities in the educational institution with regard to sustainable development initiatives. 35 percent (21 out of 59 educational institutions) have reached *Stage 1: Project* and the educational institutions have started a process to reflect on and consider sustainable development. Only 10% (6 educational institutions) have reached *Stage 2: System* and the educational institutions are managed in accordance with the

criteria of sustainable development. Also, only 10% (6 educational institutions) have reached *Stage 3: Profile* and have accredited Eco-School programme.

According to the data, the institutions minimally implement the sustainable development initiatives in the education management process of the educational institution that does not meet the vision of the Project School2030.
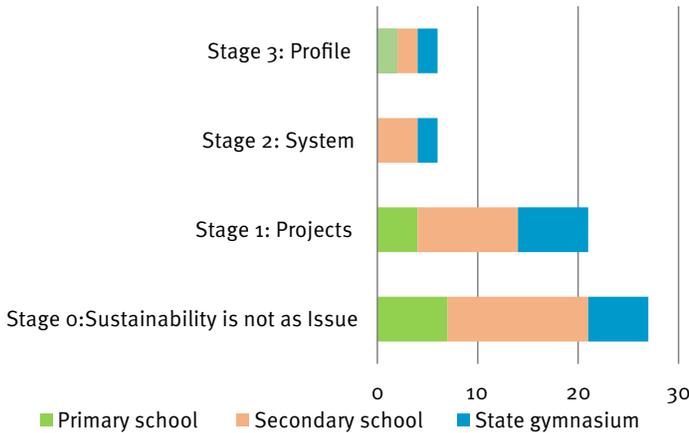
Figure 1. The data of the analysis of educational institutions for the implementation of sustainable development initiatives

According to the data on the implemented initiatives of sustainable development in education management of institutions (Figure 2) – 78 percent (46 out of 59 educational institutions) implement recycling and waste sorting initiative, also, 62 percent (37 out of 59 educational institutions) placed container for disposing of batteries. 44 percent (26 out of 59 educational institutions) implement Smart Management School Programme, they are focused on digital strategy development. Smart Management School Programme benefits with four key elements as interactive classes, cooperative activities, a motivating environment and digital content. Also, Smart Management School Programme helps to increase the digital competence of teachers of professional subjects in online training and create a digital platform in the MOODLE environment. 38 percent (23 out of 59 educational institutions) are involved in Erasmus Green Deal projects, one of the European Commission's six priorities for 2019–2024. The European Green Deal project aims to improve the well-being and health of citizens and future generations by providing eight actions: climate, environment and oceans, energy, transport, finance and regional development, research and innovation, agriculture and industry.
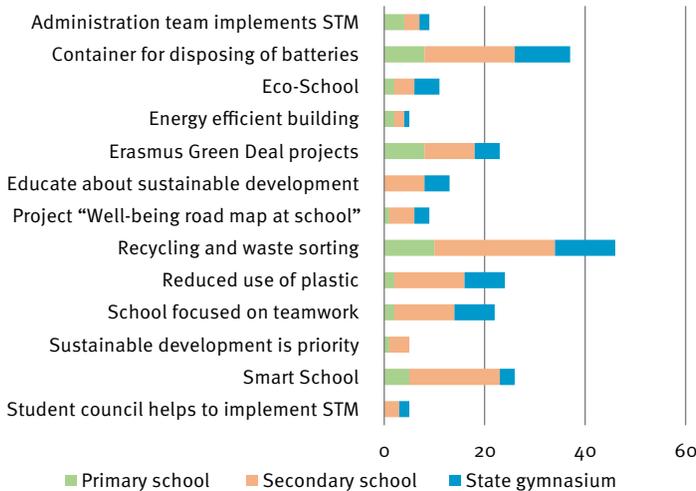
Figure 2. The implementation of sustainable development initiatives in education management of institution

Only 18 percent (11 out of 59 educational institutions) have got the accreditation of Eco-School programme and received the Green Flag as a symbol that sustainable development is one of priorities of the educational institution. Also, only 8 percent (5 out of 59 educational institutions) have energy efficient buildings, because educational institutions have been renovated in last 10 years. One of the participants of the study has received "Most Energy Efficient Building in Latvia 2020" award, given by the Ministry of Economics (MoE) in cooperation with the "Būvinženieris [Civil Engineer]" magazine and the Ministry of Environmental Protection and Regional Development (MoEPRD).

18 percent (9 out of 59 educational institutions) admit that administration team implements STM, as well, only 8 percent (5 out of 59 educational institutions) of educational institutions implement the student-centred approach and student council helps to implement sustainable development initiatives.

According to the data, the institutions minimally implement the sustainable development initiatives in the education management, majority of initiatives are related to environmental pillar. The limitation of the research could be the insufficient information on the homepage of the educational institution. It did not always provide an accurate picture of what was happening (project, initiatives, development strategy) regarding the implementation of the sustainable development initiatives in an educational institution.

Analysing the homepages, the indicators that meet the STM criteria, according to the Environmental Management and Audit Scheme (European Commission, 2021),

Global Eco-Schools Programme (n.d.) and Sustainable Development Initiatives (see Table 1, created by authors) were collected. The collected data reflect what initiatives are being implemented, which allows authors to understand whether there is a common understanding of STM in educational institutions in Latvia. According to the findings, there are no uniform sustainable development criteria for educational institutions of Latvia.

Twelve interviews with educational institution principals were conducted to analyse the policy of school regarding the implementation of the sustainable development initiatives in educational institutions. The aim of the interview was to understand the notion of the sustainable team management in educational institutions, as well as how the school administration promoted the teamwork and corporate pillar. Seven questions were asked to the representatives of educational institutions. First, they were asked to introduce themselves and their educational institution and justify why these things were told. School representatives were invited to describe what a prospective teacher should know about the educational institution, what a child's parent should know about the educational institution, and what a student should know about the educational institution. Also, it was requested to describe whether their educational institution worked as a team and what was the evidence of this, as well as the last question was asked to name the prerequisites for the team to continue to work successfully.

According to the data collected, the majority of principals admitted that sustainable development was important for "stable economic growth, conservation of natural resources, social progress and equality and environmental protection".

According to the findings of the interviews, the majority of educational institution principals agreed that for last years, especially during COVID-19, the priority of the school was digitalisation and digital transformation. Regarding Project School2030, majority of principals noted that teachers "should implement sustainable development and SDGs initiatives in the context of the lesson", also, "educate students about challenges of globalisation", but, at this stage of the implementation of education reform, "teachers faced many situations when sustainable development was not a priority".

Also, principals admitted that regarding the implementation of sustainable development and SDGs initiatives, it was important "to cooperate with student council and to involve parents' council". Only eight of the twelve educational institutions had active student councils, and five (three secondary schools and two gymnasiums) had two student councils: primary school student council (from Forms 7 to 9) and secondary school student council (from Forms 10 to 12).

According to the findings of the interviews, students were mostly involved in Erasmus Green Deal project planning and implementation, also, focused on "teamwork culture and organise team-building events regarding sustainable development initiatives for teachers and students, excluding regular school events

such as class events, excursions, and visits to cultural events". Furthermore, principals emphasised that students lacked knowledge in sustainable development initiatives, at least, if these initiatives were not taking place at their home, so it could be very useful to create guidelines to guide students for a better understanding of their contribution and involvement in STM processes.

In order to find out what fostered STM in educational institution, the principals were asked, "What is the evidence that your school is performing as a sustainable team?" 25% (three out of 12 educational institutions) named their teams as the collective, it should be noted that the principals represented small primary and secondary schools, where the teaching staff did not exceed 20 teachers. 33% (4 educational institutions) named their teams as sustainable teams, emphasized that they promoted sustainable development initiatives, as well, they had received the accreditation of Eco-School programme or had been involved in Erasmus Green Deal projects. They focused on teamwork and cooperation among administration team members, teachers and student council, also, had the Eco-Council in educational institution. The Eco-Council is primarily student-led, it aims to promote sustainable development initiatives, also, creates Green Action Plan and informs about Eco actions in educational institution. The Eco-Council in educational institution ensures that everyone in the institutional community is represented in the decision-making process, providing a link between students, teachers and the whole institutional community, and it takes the lead in delivering the Green Action Plan.

42% (five out of 12 educational institutions) named their teams as administration teams, also, noted that the priority of the school was to implement digital transformation, so, they did not pay enough attention to sustainable development and teamwork cooperation, which was influenced by the frequent change of teachers, COVID-19 pandemic and the workload of teachers, in connection with what had been happening in the world in the last two years.

According to the findings of the interviews, principals mentioned the elements of STM related to team performance, such as

> *organisational climate and environment, seminars or webinars about sustainable development and SDGs for teachers and students, competences of principals and teachers, organisational culture, team culture, team performance, cooperation with students and parents, initiatives comes from students or teachers, change management and adoption to new challenges, as well, to promote sustainability in society and taking the initiative and participating in youth and NGO conferences and forums regarding Sustainability.*

According to the literature review, no one mentioned democratic decision-making and the motivation of the participants in the long term, but kept focus on creating partnerships with internal and external resources.

Less than half of the interviewed principals, 42 percent (five out of 12 educational institutions), continued to focus on "student well-being and the joy of learning at school", indicating, "principals and administration teams do not understand how to develop and maintain STM". Furthermore, the educational institution lacked "an appropriate environment for the long-term development of their team and organisation".

The principal of gymnasium said:

> *It is important for us to create an environment and educate students, so, they will have sustainable mindset. We observe the problems of globalization, ignorance of sustainable values, so it is necessary to start talking about it in school and society. We can exist without digital technologies, but we cannot survive without clean air, before we transform a child into a "digital citizen", we must teach them to respect nature, resources, human capital, only then technology and material values.*

It is critical to emphasise this when answering the question, "Why is it difficult to implement sustainable development initiatives in your educational institution?". Majority of principals noted that sustainability should be placed as priority on national level in everyday practises. Also, schools need to receive financial support for STM implementation, because, at this moment, principals and their teams are attracting Erasmus or other project funds.

The principal of a small countryside school described the problem in the implementation of "A whole-school approach to sustainability" suggested by European Commission. Principal said that:

> *Food is one of the key areas where schools can effectively transform their actions and implement sustainable solutions across the board. For example, if students grow their own food in school gardens, schools can build awareness by labelling the food in the menu of cafeteria and informing students about the environmental impact of the choices they make. Leftover food, with the help of local charities, can be distributed to those who need it most. Also, teachers can emphasize food-related sustainability issues through the curriculum, and students can discuss the issue at home.*

However, principal and his team faced financial issues and this project was stuck, they were trying to cooperate with municipality and local farmers for the implementation of sustainable development initiative.

Answering the last question of the interview "What are the requirements for the successful implementation of STM?", majority of principals admitted that they should talk more about sustainable development initiatives, as well, teachers should be educated about this topic. Principals also noted that they

should motivate teachers to organise events according to sustainable development initiatives. As well, few principals gave promise to explore communities and programmes, such as Eco-School, to be involved in. Principal of gymnasium admitted that: "We should educate our society to think for sustainability at workplace, at home and at school".

Conclusions

The article deals with a systematic literature review, defining such terms as sustainable team and team performance as key elements for embedding STM in organization. The study expounds on the importance of sustainable development initiatives that proactively seek to contribute to sustainability equilibria of today, as well as their inter-relations within the time dimension (i.e., the short, long-term), while addressing the institutional system such as management and strategy, assessment and communication. The importance of team performance and organizational culture in educational institution is outlined as well.

The development of a STM in an educational institution depends on combining the five pillars (Environmental, Economic, Social, Political and Corporate) of sustainable development in education such as a complex process that should result in a completely new vision of educational institutions. It raises the necessity for a management structure to encourage and support the sustainability initiatives within the organisation.

Based on a preliminary data of a larger scale and long-term grounded theory research, it can be concluded that the institutions yet minimally implement the sustainable development initiatives in the education management process of the educational institution. That does not meet the vision of the Project School2030. Also, the most used initiatives are related to environment pillar.

The analysis of the data show that 45 percent (28 out of 59 educational institutions) have reached *Stage 0: Sustainability is not (yet) an issue*, 35 percent (21 out of 59 educational institutions) have reached *Stage 1: Project* and the educational institution has started a process to reflect on and consider sustainable development. Only 10% (6 out of 59 educational institutions) have reached *Stage 2: System* and the educational institution is managed in accordance with the criteria of sustainable development. Also, only 10% (6 out of 59 educational institutions) have reached *Stage 3: Profile* and have got the accreditation of Eco-School programme.

It can be concluded that according to the analysed data of the interviews, the majority of principals admitted that sustainable development was important for "stable economic growth, conservation of natural resources, social progress and equality and environmental protection".

Although, less than half of the interviewed principals, 42 percent (five educational institutions), continued to focus on "student well-being and the joy of

learning at school", indicating, "principals and administration teams do not understand how to develop and maintain STM".

The following limitations of the study can be indicated, first of all, the information on the homepage of the educational institution does not always provide an accurate picture of what is happening (project, initiatives, development strategy) in the educational institution. Also, from such a small sample, general statements cannot be made, so the authors recommend to explore the notion of organizational performance for sustainable development education. It should be admitted that is necessary to describe the concept of a STM in an educational institution at the national level, as well as the role of students in it must be defined. In addition, there is no shared understanding of sustainability among the members of the education management team.

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Digital Competence of Medical College Teachers According to Digcompedu Framework

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ABSTRACT

Over the last decade, learning and working in medicine have been increasingly influenced by digital tools and the "digital transformation" is now a popular topic. Today's medical students are growing up in a digital age in which digital tools and devices are a regular part of their professional life. Digital transformation in healthcare is not just about technology but strategy and new ways of thinking. Developing digital competence is essential to health professional education to increase confidence in accessing the best evidence for clinical practice. Healthcare lecturers play a crucial role in promoting the acquisition of digital competencies and therefore need to be digitally competent themselves. This study aims to identify teachers' digital competence at one medical college using the framework for the Digital Competence of Educators (DigCompEdu). A total of 47 medical college teacher participated. The results confirmed that the self-assessment instrument developed is reliable, valid, and thus suitable for measuring teachers' digital competence. Generally, values are centred across the four major competence categories, and most participants obtain a score at the intermediate (B1) level. Investing in teacher training aimed at practical work with students is necessary, as the area showing the most significant weaknesses is Area 5: Empowering Learners. In particular, teachers also need to help their students use technologies in their education.

Keywords: digital competence, healthcare education, information technology, teacher, DigCompEdu

Introduction

Digitalisation and new technologies have caused significant changes in the way people access information and communicate with each other. Information is distributed in the form of digital technology and nowadays, access to information is possible anywhere and anytime (Saykili et al., 2019). Digital technologies are

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also increasingly entering the field of education. Technology is used to deliver education, knowledge and skills in new and innovative ways. This, in turn, requires adaptation for educational institutions, teachers and students (Kamsker et al., 2020).

Evaluating the digital competences of teachers is essential, because often it is the level of competence of teachers that can play a decisive role in promoting the acquisition of digital competence in their students. The results of several studies show that the higher the level of digital competence of the teacher, the better the indicators of digital literacy of the student (Maini et al., 2021; Sillat et al., 2021). The most critical pedagogical factors that create obstacles in the development of students' digital skills and competencies are insufficient knowledge of teachers and lack of skills in cooperation with students, weak collaboration with colleagues, inability to support learning activities based on digital technology, as well as insufficient digital communication skills.

Digitisation of healthcare and the importance of digital competence

The comprehensive use of digital technologies requires the ability to engage critically and competently in the digital environment and requires certain skills to access, select and interpret information, to communicate effectively and to create content in a way that respects others and uses technology responsibly (European Commission, 2021). According to the definition of the European Commission, digital competence is defined as "the confident, critical and responsible use of digital technologies to learn, work and engage in society. This includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), security (including digital well-being and cyber security competencies), intellectual property issues, problem solving and critical thinking" (European Council, 2018).

Digital competence can be understood as the ability to effectively use technology to improve functioning in all areas of daily life. However, digital competence is not just a skill to be developed separately, but a set of skills, abilities and attitudes to be used in different fields and forms of knowledge (Ferrari et al., 2014).

The development of digitisation has also significantly affected the healthcare system, facilitating the exchange of information between medical institutions and patients. A secure and fast means of transmitting information collected by different individuals is an important prerequisite for coordinating patient treatment and overall care. Representatives of health care professions need to learn new competencies and new areas of activity, which include several levels, including a different model of relationship with the patient, which is more based on mutual trust, gradual learning of digital tools as a result of training, changes in the technical representation of the provision of care services, as well

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as collaborative and sharing approach through interoperable systems (European Economic and Social Committee, 2017).

In order for the benefits of digitisation to be fully utilised and included, increased attention should be paid to the digital competence of students, teachers and healthcare professionals involved in the healthcare sector.

Education and training of healthcare professionals are key drivers of digital health adoption. Improving the digital skills of health care students in the process of health studies is particularly important to ensure the acquisition of basic knowledge in working with health information in a digital environment, to improve students' understanding of user-oriented digital services, including the design and operation of e-health services, the ability to select and interpret critical data. Healthcare education needs to adapt to different healthcare contexts, including digitised healthcare systems and the digital generation of students in a hyper-connected world (Han et al., 2019).

For example, Sánchez-Caballé, a researcher at the University of Spain, and colleagues studied how digital competence is developed in higher education as part of a systematic review. As a result, it was emphasized that it is essential to promote the competence of academic staff by adapting it to the pace of technological development (Sánchez-Caballé1 et al., 2020).

Digital competence is also crucial for teachers. Tomczyk and colleagues (2021) found that the implementation of technology by teachers depended on how highly they valued their own digital competencies, as well as their attitudes to the implementation of such technologies (Tomczyk, et al., 2021).

Considering all of the above, this research will explore teachers' digital competence level in one of the medical colleges in Latvia.

DigCompEdu self-reflection survey tool

In order to ensure the improvement of digital competences, the digital skills of teachers who pass on knowledge to their students are essential. The digital competence of teachers can be defined as a set of knowledge, abilities and skills about information and communication technologies (ICT) related to the teaching profession and which can help to solve professional and/or pedagogical problems in the knowledge society (Cabero-Almenara et al., 2021; European Union Council, 2018; Ghomi & Redecker, 2019).

Different frameworks are used to assess digital competence and according to the World Bank's 2020 report Digital Skills: Frameworks and Programs , one of the most comprehensive and widely used universal digital competence frameworks is the framework developed by the European Union European Digital Competence Framework for Citizens – DigComp. On the other hand, regarding the assessment of employees and lecturers in the education sector, the research conducted by the researcher Cabero-Almenara (2021) together with her colleagues has compiled

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several of the most important frameworks for the assessment of the digital competence of teachers – European Union Framework of Digital Competence of Educators – DigCompEdu; The Framework of the "International Society for Technology in Education" (ISTE) for teachers; the UNESCO framework of ICT Competency Framework for Teachers u.c. (Cabero-Almenara et al., 2021).

DigCompEdu was published in late 2017 by the Joint Research Centre of the European Union (Redecker & Punie, 2017). Its main objective is to align the European educational policies with such reference framework. Moreover, it is a synthesis of scientific studies at the local, national, European and international level (Ghomi & Redecker, 2018; Redecker & Punie, 2017). DigCompEdu is a digital competence model with 6 differentiated competence areas.

Each area has a series of competencies that "teachers must have in order to promote effective, inclusive and innovative learning strategies, using digital tools" (Redecker & Punie, 2017, p. 4).

1. Professional commitment: Capacity to use digital technologies to improve the teaching process and interact professionally with colleagues, students, parents and different agents of the educational community. Furthermore, this communication through technology allows for individual professional development and collective and contin uous innovation in the educational organisation.

2. Digital resources: Identifying quality educational resources. Teachers must also beable to modify, create and share these resources to adjust them to their objectives,students and teaching styles. Likewise, they must know how to use and administer the digital content responsibly, respecting the author rights and protecting personal data.

3. Digital pedagogy: Knowing how to design, plan and implement the use of digital technologies in all the phases of the teaching process, promoting student-centred approaches and methodologies.

4. Evaluation and feedback: Digital technologies can improve the existing evaluation strategies and pave the way for new and better evaluation methods. Moreover, after analysing the large amount of available data (digital) about the individual interactions of students, teachers can provide more specific comments and support.

5. Empowering the students: One of the key strengths of digital technologies in education is their potential to boost the collaboration of students in the teaching-learning process and their autonomy in it. Moreover, digital technologies can be used to provide learning activities adapted to the competence level, interests and learning needs of each student.

6. Facilitating the competence: The capacity to facilitate the digital competence to the students is an integral part of teacher competence in ICT and the main theme of this competence area.

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Each individual competence of the DigCompEdu framework is discribed along six proficiency levels (A1, A2, B1, B2, C1, C2) with a cumulative progression. The scoring rule for the instrument allocates 0 point to the lowest answer option, 1 to the second lowest, and so on, so that the maximum number of points per question is 4. The maximum total number of points is 88.
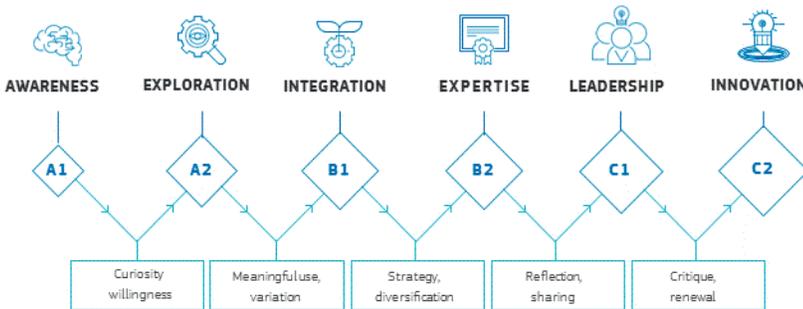
Figure1. DigCompEdu progression model- Source: Redecker & Punie (2017)

Methodology

The digital competence of the higher education college teachers was measured with the DigCompEdu Check-In instrument based on the DigCompEdu framework and its proficiency levels. The focus of the framework is not on technical skills. Instead, it explains how lecturers can use digital technologies to enhance and innovate their practices. The content of DigCompEdu migrated to the online survey platform VisiDati.lv. The research instrument consisted of 22 statements supplemented with demographic questions (gender, age, education level), and the question of the duration of the use of digital technologies in pedagogical work was included. The research instrument development was guided by two principles:

1) to condense and simplify the critical ideas of the DigComEdu framework and
2) to offer targeted feedback to teachers according to their level of competence for each of the 22 indicators.

The self-assessment instrument was approved by the medical college's Ethics Commission, and participation was voluntary, with prior informed consent given of the purpose and its confidentiality. Since this research it was planned to collect participants' personal data (email addresses), privacy policy principles were described in the introduction to the questionnaire. It was explained that the data would be anonymised and stored separately from publicly available research

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results within the means available. The participants were also informed that they could withdraw from the research at any time.

In the first stage of the study, 89 teachers were sent an email with an invitation to participate in the survey to determine self-assessment of digital competence in accordance with the DigCompEdu framework. As a result, 47 participants agreed to take part in the research.

After completing the survey, in the second stage of the study, the participants were sent a scale of digital competence from A1–C2 (Appendix 1), where the characteristics of each level were reflected, and the participants were asked to evaluate their current digital competencies based on the characteristics. Forty participants took part in the second stage of the survey. After receiving the consent of the respondent, the respondents were given feedback by sending a total evaluation of the points and an explanation to the email indicated by the participant.

The novelty of this study is based on the second survey, where teachers, after independently familiarising themselves with the levels of digital competence from (A1–C2), had to indicate which level of digital competence corresponds exactly to them (it should be noted that at this stage when filling out the second questionnaire, the research participants were not informed about the results of the first questionnaire). In this way, teachers could check whether their assessments of digital competence match or whether teachers overestimate themselves or, on the contrary, are not sure of their digital competencies.

Sample

The participants were medical college teachers who work in higher education in the study direction "Healthcare" (*European Qualifications Framework level 5*). There are a total of five medical colleges in Latvia, three are located in Riga, one in Jurmala and another in Daugavpils. This study took place in one of Riga's medical colleges.

Information about participation in the study was sent to all college teachers (89) by e-mail, emphasizing that participation is voluntary. A total of 47 medical college lecturers (38 females and 9 males) participated and mean age of the sample was 44,30 years (*SD* = 11.51). Responses were collected between December 2021 and January 2022.

Self-assessment instrument

As part of the study, respondents had to provide answers to 22 statements according to the DigCompEdu Check-In instrument methodology. Five answer options were offered for each of the statements, and the research participant had to choose the option that best corresponds to their practice. The scoring rule for the instrument allocates 0 points to the lowest answer option, 1 to the

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second lowest, and so on, so that the maximum number of points per question is 4. The maximum total number of points is 88. The scoring scale is attached in Appendix A.

Sample question:

I create my own digital resources and modify existing ones to adapt them to my needs.
- I do not create my own digital resources
- I do create worksheets/lecture notes or reading lists with a computer, but then I print them
- I create digital presentations, but not much more
- I create different types of resources
- I set up and adapt complex, interactive resources

For each study participant, the overall score was calculated individually according to the methodology developed by the European Commission Joint Research Centre (Appendix A).

The study calculated Cronbach's alpha coefficient. The entire instrument with 22 items has an excellent internal consistency with a value of .920 for Cronbach`s alpha. (Appendix B).

Results

This paper is based on a case study of 47 medical college lecturers of one medical college. There were more female participants (81%) than male participants (19%). During the research, the demographic characteristics of the research respondents and also the experience of the respondents in working with digital technologies were clarified. The obtained results related to the experience in using digital technologies are reflected in Figure 1. In the framework of this study, digital technologies included digital devices, applications and platforms used in pedagogical work with students.

The use of digital technology at work is not necessarily clearly linked to higher digital competence level, which can be seen from the results in Table 1. As part of the study, information was gathered about the use of digital technologies by teachers in the study process. As can be seen in Table 1, most of the teachers have at least 10–14 years of teaching experience using digital technologies.

At the same time, it can be seen that more experience in working with digital technologies does not mean that teachers have a more confident assessment of their digital competences. Among those with 10 to 14 years of teaching experience most had low (A2/B1) levels of competence.

In the next stage of the study, the respondents provided answers to 22 statements collected in 6 areas according to the methodology of the DigCompEdu Check-In instrument. The obtained results are shown in Table 2.

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How long have you been using digital technologies in teaching?
(*n* = 47)
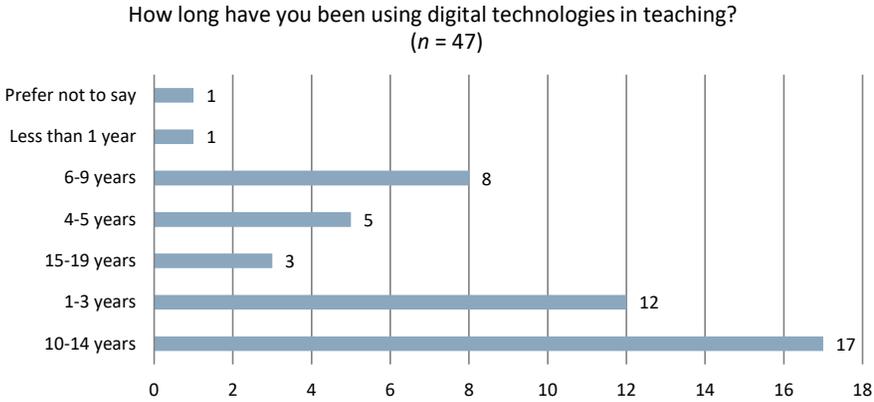
Figure 1. Duration of use of digital technologies in pedagogical work

Table 1. The use of digital technologies at work in relation to the level of digital competence

How long have you been using digital technologies in your teaching?	A1	A2	B1	B2	C1	Total
Less than 1 year	1	0	0	0	0	1
1–3 years	0	3	5	3	1	12
4–5 years	0	1	1	3	0	5
6–9 years	0	0	6	1	1	8
10–14 years	1	2	6	8	0	17
15–19 years	0	0	1	0	2	3
Do not wish to specify	0	0	1	0	0	1
Total	2	6	20	15	4	47

Table 2. Assessment by the Medical College Teachers (%)

Level	Area 1: Professional Engagement	Area 2: Digital Resources	Area 3: Teaching and Learning	Area 4: Assessment	Area 5: Empowering Learners	Area 6: Facilitating Learners' Digital Competence	Total
A1	4.26	6.38	19.15	10.64	21.28	17.02	4.26
A2	21.28	23.40	19.15	**42.55**	29.79	21.28	14.89
B1	**51.06**	19.15	**38.30**	19.15	19.15	**51.06**	**40.43**
B2	21.28	**36.17**	19.15	14.89	19.15	8.51	34.04
C1	2.13	14.89	2.13	6.38	10.64	2.13	6.38
C2	0.00	0.00	2.13	6.38	0.00	0.00	0.00

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Few participants scored at the lowest or highest level of competence. However, all four core competences levels, Explorer (A2) to Leader(C1), were well represented in the group. In accordance with the design of the scoring rule and its intentions, most respondents were classified to be either Integrators (B1) (40.43%) or Experts (B2) (34.04%).

According to DigCompEdu framework Level B1 – Integrator – characterizes teachers as professionals who use digital technologies in different contexts and are willing to do more. However, they still need to know which technologies work better in each strategy and teaching method.

Whereas Level B2 – Expert – characterises teachers use a range of digital technologies confidently, creatively and critically to enhance your professional activities. They select digital technologies for particular situations, and try to understand the benefits and drawbacks of different digital strategies. Experts are the backbone of any educational organisation when it comes to innovating practice.

After filling out the first questionnaire, the respondents were sent another additional questionnaire, which contained only one question "How do you currently assess your digital competence as a teacher?" and an added description with digital competence levels from A1–C2. In the second questionnaire, feedback was received from 40 respondents, therefore Table 3 reflects only the self-assessment provided by respondents who participated in both the first and second stages of the study.

As can be seen in Table 3, teachers self-assess their current digital competence based only on the descriptions of digital competence levels weaker compared to the results obtained in the first survey.

Table 3. Self-assessment of digital competence after the first and second surveys

Digital Competence Level	Survey 1 ($n = 40$)	Survey 2 ($n = 40$)
A1	2	1
A2	6	18
B1	16	13
B2	13	6
C1	3	1
C2	0	1

As part of the study, it was found that 23 teachers rated their level of digital competence lower than it was reported when filling out the survey tool. On the other hand, 8 teachers overestimated their level of digital competence, indicating it was higher than it was when filling out the survey tool. Only 9 teachers had the same level of digital competence both when filling out the first questionnaire and the second.

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Table 4. Pearson Correlation Coefficient Result (22 competencies)

Area	No.	Statements (1–22)	Pearson Correlation Coefficient between results of digital competence level statements (1–22)
Professional engagement (1)	C1	Organizational communication	0.59
	C2	Professional collaboration	0.35
	C3	Reflective practice	0.53
	C4	Digital CPD	0.24
Digital Resource (2)	C5	Selecting	0.59
	C6	Creating&modifying	0.52
	C7	Managing, protectiong, sharing	0.44
Teaching and learning (3)	C8	Teaching	0.69
	C9	Guidance	0.64
	C10	Collaborative learning	0.65
	C11	Self-regulated learning	0.70
Assessment (4)	C12	Assesment strategies	0.65
	C13	Analysing evidence	0.77
	C14	Feedback & planning	0.79
Empowering learners (5)	C15	Accessibility &inclusion	0.58
	C16	Differentation & personalisation	0.70
	C17	Actively engaging learners	0.68
Facilitating learners' digital competence (6)	C18	Infiormation & media literacy	0.60
	C19	Communication	0.41
	C20	Content creation	0.49
	C21	Responsible use	0.55
	C22	Problem solving	0.63

Correlation is significant at the 0.01 level (2-tailed).**

As part of the study, a correlation analysis was also carried out in order to find out whether there is a relationship between statements characterising digital competence and the level of digital competence, or the total score obtained. The research used Pearson correlation coefficients between the z-scores for the statements 1–22, and the z-scores for the digital competence level of teachers. Overall, a positive relationship was found in statements C8–C14, which are related to the 3rd field Teaching and learning C16–C18, which is related to the 4th field Assessment and C22, which is related to the 6th field Facilitating learners` digital competence. The results demonstrate that the more developed is any of the digital competence area, the higher is the digital competence level. For example, teachers having better results in "Teaaching and learnig" have higher digital

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competence, and it could be interpreted that they more often introduce digital tools and resources into the study process in order to improve learning intervention effectiveness; and they also experiment and develop new study formats and pedagogical methods.

Discussion

In the digital age, higher education institutions face serious challenges for students and digital tools are transforming the way today's students think and behave (Saykili, 2019). Developing digital competence is an essential component of health professional education to increase confidence in accessing the best evidence for clinical practice (Topol et al., 2015) To better understand the digital competences that teachers should develop, including the promotion of meaningful integration of digital technologies in the study process, it is necessary to find out how the teachers themselves assessed their digital competences. Most of the teachers who participated in this study indicated that their digital competences correspond to the B1 level (40.43%) and B2 level (34.04%) and it is considered as an average level. Similar results were also found, for example, in Cabero-Almenara et al., (2020) a study conducted in Spain using the DigCompEdu framework. Within the framework of the study, professors of higher education institutions were evaluated and the results indicated a significant lack of digital training for instructors, both in terms of both genders, age ranges, and different fields of knowledge. All teachers who participated in the study scored between the basic and intermediate levels (Cabero-Almenara et al., 2020).

Also in a study conducted in Morocco among English teachers, the majority of the study participants had a B1 level. This study observed that teachers with longer teaching experience also had higher levels of digital competence (Benali et al., 2018).

Evaluating the indicators of digital competence of teachers by area, it can be concluded that the weaker indicators of digital competence are exactly in Area 5: Empowering Learners. Therefore, it is necessary to invest in teacher training aimed at practical work with students. It is the implementation of digital technologies that can offer new ways to engage students and better adapt to the educational needs of the students themselves (Shonfeld etal., 2021).

The study revealed that more than half of the research respondents rated their level of digital competence lower and did not correspond to the results collected by filling out the DigComEdu survey questionnaire. Only 22% ($n = 9$) of respondents had the same self-assessment of digital competence when filling in both the first and second questionnaires. The obtained results indicate a tendency that medical college teachers are not confident about their own digital competences and in the future this may contribute to the emergence of digital divides,

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which may manifest as differences in digital and technological skills between lecturers.

Within the framework of the study, several limitations have also been identified, which should be taken into account when interpreting the results. First, it should be noted that this is a small sample of teachers representing one medical college. It would be advisable to repeat the study with a larger number of respondents, including teachers from other branches. The second factor is the low activity of teachers to participate in the study, which could also have influenced the obtained results. It is possible that the uneven distribution of genders, which was present in this study, also revealed some negative results.

In future studies, it would be worthwhile to obtain qualitative data in addition to using the DigCimpEdu instrument, for example by conducting interviews or focus group discussions with teachers, which would strengthen the obtained research results.

Conclusions

The study aimed to provide an opportunity for medical college teachers to evaluate their strengths and weaknesses in using digital technologies for educational purposes and to support and encourage teachers to use digital tools for academic promotion and innovation. The overall level of digital competence of medical college teachers was B1 – Integrator, which shows much room for improvement, especially in using digital technologies in different contexts and for other purposes. Teachers must improve their understanding of adapting digital technologies to pedagogical strategies and methods. The self-assessment of teachers' digital competence is a successful solution that colleges and universities can use to encourage teachers and lecturers to self-reflection and internal motivation to develop digital pedagogical competences and possibly promote a more comprehensive implementation of digital technologies in pedagogical practice.

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Appendix A

A1 below 20	This means: You have an opportunity to begin enhancing your skills with digital technology. The feedback you get from this survey has identified a number of actions you can try. Select one or two to start off with over the next learning period, focusing on meaningfully enhancing your teaching strategies. As you do so, you'll find yourself moving to the next step of digital competence, the Explorer level.
A2 between 20 and 33	This means: You are aware of the potential of digital technologies and are interested in exploring them to enhance pedagogical and professional practice. You have started using digital technologies in some areas and will benefit from more consistent practice. You can increase your competence by collaborating and exchanging with colleagues, and by further amplifying your repertoire of digital practices and skills. This will move you to the next step of digital competence, the Integrator level.
B1 between 34 and 49	This means: You experiment with digital technologies in a variety of contexts and for a range of purposes, integrating them into many of your practices. You creatively use them to enhance diverse aspects of your professional engagement. You are eager to expand your repertoire of practices. You will benefit by increasing your understanding about which tools work best in which situations and on fitting digital technologies to pedagogic strategies and methods. Try to give yourself some more time for reflection and adaptation, complemented by collaborative encouragement and knowledge exchange, to reach the next step, Expert (B2).
B2 between 50 and 65	This means: You use a range of digital technologies confidently, creatively and critically to enhance your professional activities. You purposefully select digital technologies for particular situations, and try to understand the benefits and drawbacks of different digital strategies. You are curious and open to new ideas, knowing that there are many things you have not tried out yet. You use experimentation as a means of expanding, structuring and consolidating your repertoire of strategies. Share your expertise with other [lecturers] and continue critically developing your digital strategies to reach the Leader (C1) level.
C1 between 66 and 80	This means: You have a consistent and comprehensive approach to using digital technologies to enhance pedagogic and professional practices. You rely on a broad repertoire of digital strategies from which you know how to choose the most appropriate for any given situation. You continuously reflect on and further develop your practices. Exchanging with peers, you keep updated on new developments and ideas and help other [lecturers] seize the potential of digital technologies for enhancing teaching and learning. If you are ready to experiment a bit more, you'll be able to reach the last stage of competence, as a Pioneer.
C2 above 80	This means: You question the adequacy of contemporary digital and pedagogical practices, in which you are a Leader. You are concerned about the constraints or drawbacks of these practices and driven by the impulse to innovate education even further. You experiment with highly innovative and complex digital technologies and/or develop novel pedagogical approaches. You lead innovation and are a role model for other [lecturers].

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Appendix B

		Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
C1	I systematically use different digital channels to enhance communication with [student]s, parents and colleagues	.559	.542	.917
C2	I use digital technologies to work together with colleagues inside and outside my educational organization	.383	.601	.920
C3	I actively develop my digital teaching skills	.454	.501	.919
C4	I participate in online training opportunities e.g. online courses, MOOCs, webinars, virtual conferences.	.269	.507	.922
C5	I use different internet sites and search strategies to find and select a range of different digital resources	.611	.721	.917
C6	I create my own digital resources and modify existing ones to adapt them to my needs	.485	.737	.919
C7	I effectively protect personal data, e.g. exams, [student]s' grades, personal data	.435	.510	.920
C8	I carefully consider how, when and why to use digital technologies in [class], to ensure that they are used with added value	.709	.691	.915
C9	I carefully consider how, when and why to use digital technologies in [class], to ensure that they are used with added value	.586	.563	.917
C10	When my [student]s work in groups, they use digital technologies to acquire and document knowledge	.593	.655	.917
C11	I use digital technologies to allow [students] to plan, document and monitor their learning themselves	.681	.741	.915
C12	I use digital assessment tools to monitor [student] progress	.616	.687	.916
C13	I analyze all data available to me to effectively identify [student]s who need additional support	.758	.697	.913
C14	I use digital technologies to provide effective feedback	.765	.739	.914
C15	When I create digital assignments for [students] I consider and address potential practical or technical difficulties	.598	.526	.916
C16	I use digital technologies to offer [students] personalized learning opportunities	.709	.759	.914
C17	I use digital technologies for [student]s to actively participate in [class]	.660	.634	.915

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Appendix B. Continued

		Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
C18	I teach [students] how to assess the reliability of information and to identify misinformation and bias	.622	.692	.916
C19	I set up assignments which require [students] to use digital means to communicate and collaborate with each other or with an outside audience	.403	.547	.920
C20	I set up assignments which require [students] to create digital content	.412	.586	.920
C21	I teach [students] how to use digital technology safely and responsibly	.577	.551	.917
C22	I encourage [students] to use digital technologies creatively to solve concrete problems e.g. to overcome obstacles or challenges emerging in the learning process	.600	.660	.917

Ted Talks as a Digital Material in Foreign Language Teaching

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Abstract

The paper considers the opportunity of practical use of TED Talks as a digital material in the process of foreign language teaching and learning in educational institutions of different types. It has been shown that TED Talks are quite a significant and powerful tool for developing students' speaking skills. The students improve their communication skills in a foreign language; definitely, it provides further professional opportunities for getting and sharing information, experience, ideas and views. The paper illustrates that the spheres of influence of TED Talks materials, which will be used in the educational process, can be conditionally divided into four groups such as socio-cultural dimension, competence dimension, language dimension and psychological dimension. It is emphasized that TED Talks can be multifunctional, satisfying almost any didactic request. However, the teacher should take into account the certain criteria for choosing a video watching. These criteria are: what video is about, the usefulness of the topic video; the appropriateness of the video to the academic environment and the length of the video. All of these criteria help to create the video to be successful and effective. If the teacher neglects these choosing criteria, the teacher will have a negative result after the video watching and during the discussion of this video among students. The paper also highlights that the use of TED Talks during foreign language teaching helps the teacher to solve a number of problems, in particular, to overcome the negative impact of interlanguage interference, and to increase students' motivation to learn a foreign language. Furthermore, it helps to make foreign language teaching more interesting and creative.

Keywords: TED Talks, English language teaching, communication, competences, skills, professional environment, students

Introduction

There have been changes in modern society today. These changes have taken place in the socio-psychological, economic and other spheres of human life as well as education. After all, it encourages the search for new ways, means of

solving the problems of organizing the education process. Therefore, such digital technologies as Cloud Technology, YouTube, Facebook, Twitter, Google, etc. help education to become more accessible. Students can learn using digital tools anywhere and anytime. Moreover, they have the opportunity to gain knowledge, including a non-professional one. Using modern digital materials allows teachers to fully conduct teaching during online classes and makes it interesting at the same time. It encourages teachers to use modern digital tools both for online and offline education (Nezhyva, 2021). These materials make the education process mobile, interesting, individual and differentiated. At the same time, digital tools do not replace the teacher, but complement and expand his/her capabilities. In addition, during foreign language classes, it is necessary to use digital technologies which create educational material that is accessible, interesting and motivating for students.

One such digital material is TED Talks. According to the evidence of current leading professionals in English language teaching, TED Talks is one of the most promising digital materials today. According to Ahluwalia Gurleen & Deepti Gupta (2017), Tara Arntsen (2016), Mark Mallinde (2016), Adam Ramejkis (2012), it is now relevant to turn to TED Talks video, which is a resource for learning a modern foreign language. This is also followed in the article *Theory in Computer Assisted Language Learning Research and Practice* by Philip Hubbard and Michael Levy (2016), where they cover the theory of this issue in detail and consider it in the process of teaching foreign languages using ICT.

The aim of the study

This study proposes the practical use of TED Talks as a digital material in the process of foreign language teaching and learning in educational institutions of different types. Thus, the aim of this paper is to investigate the advantages and opportunities of using TED Talks presentations, and several ways of implementing TED Talks in the ELT classroom.

Methodology

The methodological framework for the study of TED Talks as a digital material in foreign language teaching is based on a number of authentic English-language sources and the author's personal teaching experience. In particular, interdisciplinary and transdisciplinary approaches were used, it was possible to involve not only traditional but also new methods and principles in the analysis of using TED Talks presentations. Among the classical approaches to scientific knowledge the principles of consistency, integrity, objectivity, historicity and development were applied. Also general scientific methods such as analysis, synthesis, comparison, abstraction, systematization are widely used in this

paper. During the academic semester, 20 TED Talks presentations were used in English classes to recreate a foreign language communication environment that promotes the development of language skills. The participants of this study were 46 first-year students, taught by the teacher, in four English classes at university in Ukraine. Of the 46 students, 16 were male and 30 were female. The students' average age was 18 years. At the beginning and end of the use of this method, all students were tested on the level of foreign language proficiency. The results of these tests, which were compared, were successful and became the basis of this study.

Results

TED Talks (which stands for "Technology, Entertainment, and Design") is a world-renowned conference which consists of short lectures. These lectures focus on the natural sciences, the arts, education, culture, business, global issues, and sustainable development – the broad subject areas which together shape our future. Here are some examples of lectures: *Wolpe: Bio-engineering by Paul Root, How to stay calm when you know you'll be stressed by Daniel Levitin, Every Kid Needs a Champion by Rita Pierson.* One speech is about 20 minutes and contains a relevant and original opinion topic. However, a successful speech is not just a worthy idea, but also the rich English language (Belmaz, 2019). This is an important factor for the improvement and development of foreign language skills, namely listening and speaking in the process of foreign language learning. After all, each lesson is based on a spoken text (TED Talk), which serves as a meaningful basis for all exercises during the class. In addition, properly chosen TED Talk materials and an organized concept help immerse students in a real communication situation that have to be practiced in order to properly use the foreign language (Hubbard & Levy, 2016). Furthermore, it activates lexical and grammatical material, stimulate conversational processes, and contribute to overcoming the language barrier, which often is in a real communication situation.

Also, in addition to developing new vocabulary, and grammatical and syntactic constructions, TED Talks promote the development of a number of different skills which are useful in an academic and professional environment (Noriko & Chi, 2004). Furthermore, the students learn to make speeches and prepare presentations by themselves, which helps them to feel free in the future when speaking at scientific seminars and conferences, etc.

Thus, we came to the conclusion that the spheres of influence of TED Talks materials, which will be used in the educational process, can be conventionally divided into four groups. They are:

1. The first group is *a socio-cultural dimension.* The topics are in the TED Talks videos relate to the most pressing problems of humanity such as interracial

and interethnic tolerance, social adaptation of people with special needs, the impact of the latest technologies on society, the role of women in modern society, etc. Moreover, obviously, watching such topics of public speaking will not only introduce students to socio-cultural trends, scientific discoveries, hypotheses and technological innovations, but will also help them to form their personal opinion about the presented information, their own vision of the causes and solutions to a particular problem (Reimer, 2002). The provocative nature of the speeches can encourage students to engage in an interested discussion about what they have heard. This discussion can be started even before watching the video and continued after one.

2. The second group is *a competence dimension*. If the teacher organizes watching TED Talks videos correctly, these videos will improve listening skills (direct watching of a recorded public-speaking presentation), reading (working on freely available full transcripts of each video speech published on the website), speaking (as part of an organized discussion on the topic of a speech with an emphasis on structural and lexical features of speech) and writing (which can be organized after the completion of the review and discussion of the problem).

However, TED Talks video develops the most important competences (Yu-jung & Hung-Tzu, 2015) such as:
- *presentation skills*. The ability to effectively prepare public-speaking presentation. This preparing consists of such stages as choice of topic, effective structuring of main ideas, and selection of techniques for successful verbal and non-verbal interaction with listeners and methods of maintaining a high level of sustained interest of the audience in the information provided by the speaker.
- *note-taking skills*. The ability to note down information, that is, to keep records that will be used for further tasks.

Presentation skills and note-taking skills will be useful to students in the academic environment (when preparing scientific papers and listening to lectures), in the professional environment (in the context of business negotiations and contact with clients, when participating in professional conferences, meetings, seminars as a speaker, as well as the listener) and in everyday life (in the sphere of interpersonal communication and private interests, like noting the main ideas of an interesting book, etc.).

3. The third group is *a language dimension*. If the educator organizes watching TED Talks videos correctly, TED Talks conferences will contribute to a contextual vision of the lexical-grammatical component of the presentations, an understanding the meaning of words, grammatical structures and constructions function in the authentic speech, analysis of lexical and syntactic aspects (Nezhyva, 2017). In addition, we consider it appropriate to emphasize the presence of a large number of speeches made not by native English speakers, but by speakers

who use British English as a foreign language and quite often have a peculiar accent characteristic of their native language. Introducing students to TED Talks shed light on the diversity of foreign accents and will give an opportunity to hear how people speak from different countries. We distinguish that it is extremely useful for the students in their future because today's students will be more likely to conduct academic or professional communication not with native speakers, but with representatives of other countries and cultures (Azimova, 2019). Thus, working with TED Talks will allow them to get used to the distinctive sound of the same words and to appreciate the richness and potential of English as a language of international communication;

4. The fourth group is a *psychological dimension*. Emotional presentation of information in TED Talks conferences, curiosity and modernity of topics create a favorable learning atmosphere, which positively affects the motivation and desire of students to listen, analyze, and perform relevant tasks. In addition, TED Talks conferences are intended to show that the main goal of the project and the English language as a mediator of international communication is successful communication and expression of one's position, regardless of a foreign accent and limited vocabulary. Students' vision of speakers who are able to interest the audience without being native speakers removes the psychological barrier, teaches not to be afraid of making mistakes in pronouncing words (Reimer, 2002). Moreover, it helps to realize that the main goal of learning English is not the ability to speak absolutely flawlessly, but the ability to express oneself clearly for the interlocutor, the ability to achieve the necessary communicative goal (Nezhyva, 2020 b). Furthermore, the discussion of interesting and topical issues raised in the video is highly likely to cause a communicative reaction in students i.e. students will have a desire to agree or disagree with the following statements, which they heard, express their own opinions, provide counterarguments, etc. It is known that students often evade the answer, remain silent or answer in monosyllables, if the topic of the question is not interesting to them, not up-to-date, not relevant or they have nothing to say because they do not have enough information about the discussed problem. When a TED Talks video is successfully chosen for foreign language classes, as well as the correct construction of the process of working with it, it will inspire students to speak i.e. students start to make their own statements and exchange ideas.

Such a wide range of advantages and areas of influence of TED Talks presentations requires a balanced approach to the creation of educational tasks in order to fully realize the potential of these videos as educational material when teaching English to students of higher education institutions. Moreover, TED Talks videos can be used into the educational process as in and out of class. If a TED Talks video is offered for watching in the class, then it should traditionally be accompanied by quality worksheets with properly structured exercises.

Of course, the teacher can use English textbooks which consists of TED Talks videos e.g. textbooks by National Geographic Learning. Otherwise, the teacher creates his/her own classroom materials. Before watching TED Talks, it is advisable to organize a preliminary discussion of the relevant problem, which will be revealed in the prepared video. Moreover, the teacher should give students the word lists as well as terms and expressions which will be used in the video. This list is called *the concept-based vocabulary teaching.* This is a conceptual approach to the presentation of new lexical items, which promotes the development of critical thinking because it helps to understand the connections between different concepts (Azimova, 2019). While watching the video, which, by the way, can be divided into parts for a more detailed discussion of each piece of information, students can be asked to find answers to questions prepared in advance by the teacher, fill in the gaps in the text, take notes, etc. After watching the video, a discussion can be held in the form of a debate during which students will have to support or give arguments to disagree with the following statements, which they heard. Moreover, students can be asked to retell the video, or even repeat the speaker's speech using nonverbal communication and body language (Yu-jung & Hung-Tzu, 2015).

Moreover, students can receive tasks (both in the classroom and as part of independent work outside the classroom) to make a speech on a related topic or a topic of their own choice or write an essay. Another task is verbal and non-verbal communication explains in detail, i.e. analyzing the structure of the public speaking. This task can be useful for Masters and PhD students who are working on research papers and preparing presentations at international conferences.

An interesting approach to watching video is offered by Mark Mallinder (2016), who provides videos to his students to watch them outside the classroom every week. First, his students get acquainted with the full text of the speech (transcript), find out the meaning of new phrases and words. Then they listen to the speech, reading its text in parallel and paying attention to the accents in the words. Later, students listen to the speaker without having the text of the speech in front of them, observing the general intonation and accents. Finally, students are asked to reproduce this same speech by making an audio recording and sending it to the teacher. Moreover, following these steps, audio recordings of student speech are listened to and analyzed in the classroom, discussion of new words and phrases is organized, and discussion is held on meaningful topics raised by TED Talks speakers (Mallinder, 2016).

Another educator Alexandra Lowe (2013) offers students to independently choose videos to watch at home, and in classes organizes watching of short fragments of the most interesting videos which were liked by students. This approach to the organization of independent work is effective because during classes, students freely discuss what they are really interested in. Furthermore,

the students can also learn from others about exciting videos which they will want to watch in their spare time. This instills interest in learning English (Lowe, 2013).

According to the purpose of the lesson, TED Talks materials can be multifunctional, satisfying almost any didactic requests. However, working with the video will be successful and effective if the teacher should take into account the certain criteria for choosing a video watching (Arntsen, 2016). These criteria are:

- *The usefulness of the topic video*. Taking into account the fact that the topic of TED Talks presentations, as indicated above is impressive in its diversity, the teacher should conscientiously select videos, in according with the curriculum, the general topic of the current module and a specific lesson. Moreover, it should be appropriateness, expediency, usefulness and the interest of the problem revealed in the speech for students of a specific group.

- *The appropriateness of the video to the academic environment*. This criterion is very similar in nature to the previous one, but it concerns a more detailed study of the video by the teacher before demonstrating it to a group of students. Here, the teacher should check the choosing video for the presence of offensive, obscene language, jokes or stories that carry an overly provocative message or have a religious, political, or sexist character. Moreover, the teacher should pay not least attention to the person and image of the speaker, as well as the academic and socio-cultural readiness and interest of students in the chosen topic.

- *The level of language and pronunciation difficulty*. When the teacher chooses a recorded public-speaking presentation offered on the TED Talks website, he/she should analyze their lexical-grammatical, phonetic and stylistic features. For the reason that a chosen public-speaking presentation will should have the lexical and grammatical units, the construction of sentences, the style of presenting information, non-verbal communication, clarity of pronunciation which will correspond to the level of students' knowledge of the English language and will not hinder perception and understanding.

- *The length of a video*. TED Talks presentations usually vary between 5–20 minutes, so the teacher should clearly plan the lesson that the chosen length of video meets the requirements of the type of the lesson.

If the teacher neglects these selecting criteria, he/she will have a negative result after the video watching and during the discussion of this video among students. So, for example, students may lose interest in the public-speaking presentation due to insufficient understanding of the vocabulary or speaking too fast in a presentation. Furthermore, the incorrect time calculation led to a violation of the structure of the lesson and inferior work with the heard information.

Moreover, the choice of social sensitivity issues for which students are not prepared to discuss, or which touch on personal experiences of students, can cause indignation or even cause too heated discussion.

Discussion

This paper had shown the rich potential of the TED Talks presentations as a quite significant and powerful tool for developing students' speaking skills. The potential direction of further scientific and methodological development of this topic is to conduct a practical experiment (with elements of surveys and observations of experimental and control groups) of implementing TED Talks materials in the English classes in higher education institutions of different types. It will allow to demonstrate the educational potential of this resource, as well as to find the most effective ways of incorporating it into the process of foreign language teaching.

Conclusion

After the collected and analyzed the results of students' level of foreign language proficiency based on the used method, some conclusions can be drawn. These are touched on one by one below:

- TED Talks offers a large number of recorded public-speaking presentations which present the process of the foreign language learning as one of the most significant trend of the 21st century.
- TED Talks are a powerful tool for preparing students to communicate in an English-speaking professional and academic environment.
- The use of TED Talks during foreign language teaching helps the teacher to solve a number of problems, in particular, to overcome the negative impact of interlanguage interference, and to increase students' motivation to learn a foreign language.
- TED Talks helps to make foreign language teaching more interesting and creative.

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Theoretical Aspects of Teaching English Grammar through Bilingual Comparativistics at the University Level

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Abstract

The article deals with an aspect of the research to explore the concept of teaching English grammar through bilingual comparativistics as one of the best methods of teaching English grammar at non-linguistic faculties of the university. This article seeks the answers to research questions: how effective is the bilingual education in teaching foreign languages comparing with monolingual one.

The article aims is to substantiate theoretical aspects of teaching English through bilingual comparativistics at the university level and to determine the main approaches to English effective assimilation by students at non-linguistic faculties.

The data were collected by performing the content analysis of scientific literature via the Internet as electronic media in accordance with such criteria as the definition of other researchers' achievements in the studied field of knowledge and determination of different points of view on the problem studied for defining perspectives of our research. The content analysis of the scientific literature was organized using such methods as *the deconstruction method* which takes into account such criteria as preserving the context of text meaning from primary sources and its correct use in the scientific research; *the method of apperception* which helped the research to be supplemented with the new information from other sources related to the chosen topic of the scientific project; *the descriptive method* allowed to highlight the key words in the study for substantiating authors' points of view relying on them.

The theoretical data were supported with the statistical data of the practical part of the research as a pilot research project on the use of a bilingual system for teaching English grammar through bilingual comparativistics for the second-year students of Faculty of Economics in V. N. Karazin Kharkov University. Theoratical aspects were studied at University of Latvia.are obtained. To confirm the effectiveness of the theoretically grounded statements of teaching English through bilingual comparativistics at the university level at the control stage of the experiment, all the indicators of students' mastery of English grammar were diagnosed using the following criteria:

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motivative level (motivation, positive students' attitude to teaching English grammar), *substantive level* (the development of analytical thinking), *procedural level* as a level of the formation of general educational skills (to be creative, educational: orientation in English grammar rules, correct oral speech, avoiding interference).

Theoretical aspects and special approaches to improve a process of teaching English grammar through bilingual comparativistics at the university level for the error-free intercultural students' communication are determined. The conceptual and terminological apparatus of the problem is characterized. Advantages and disadvantages of teaching English through bilingual comparativistics at the university level are specified. Factors for preventing interference are identified. The integrative educational activity that synthesizes essential conditions for teaching English grammar through bilingual comparativistics are determined.

The authors came to the conclusion that teacher's actions to attract students' attention and interest to learn English grammar through bilingual Comparativistics at the university level can be provided by the formation of the general semantic system which is the same in both languages (native and foreign ones) in which meanings of foreign language concepts are revealed for students through concepts in their native language at the verbal and semantic level, as well as at the cognitive and pragmatic ones that show such students' results in learning English grammar through bilingual Comparativistics effectively as well as developing their creativity, analytical and logical thinking, helping students to speak English fluently, avoiding interference. Perfect results allow students use complex English grammatical structures correctly in their error-free intercultural communication and help them to master British English at level B2.

Keywords: bilingualism, communication, comparativistics, English, foreign language, teaching, university

Introduction

Today the necessity to master British English at level B2 is a general feature of the language acquisition by students at the university. However, monolingual learning English gives examples of incorrect strategies because they provide ineffective efforts spending on teaching. Especially, today English teachers are faced with a problem when their explanation of grammar rules in FL2 (the second foreign language) does not allow students to use complex grammatical structures of a foreign language in their speech correctly.

Also, a lot of researches improve that the recipients' mental processes usually occur when FL2 is learned through the bilingual perception (Who are bilingual persons?, 2022). Whereas, the recent researches made by neurologists, psychologists and linguists with the help of the latest brain scanning tools revealed a lot of cognitive and intellectual advantages of bilingualism. The main explanation of them is the fact that our incredibly flexible brain is perfectly adapted to work in a multitask mode. This is partly explained by the grammatical tools of the language. Bilinguals rarely confuse languages, but they may use a word

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or a grammatical structure from another language when their interlocutor also speaks it. As the scientist Vinche notes: "Bilinguals learn grammatical rules better and identify errors in the grammatical constructions easier" (Vinche, 2016). According to that, the consequences of the bilingual interaction between different English grammatical structures and native ones can be seen at almost all levels and have close, extensive connections between these two languages.

The topicality of the research is strengthened by English teachers' interest to find effective approaches for improving the process of teaching English grammar at the university level which can not only systematize grammar rules in students' mind with the aim of the error-free intercultural communication, but also help learners to understand and study a content of different subjects better.

Thus, our hypothesis is that the best method of teaching English grammar at non-linguistic faculties of the university can be only effective through bilingual Comparativistics: it lets students develop their creativity and analytical thinking, be motivated in the educational process, avoid interference, be oriented in complex foreign grammar rules well and speak English correctly.

The present article is a theoretical concept paper based on a literature review and it is supported with the practical part of a pilot research project on the use of a bilingual system for teaching English grammar through bilingual comparativistics for the second-year students as the analysis of students' tests on mastering English grammar.

Basing on the study of the scientific literature, it was established that certain aspects of the mentioned problem were revealed in foreign and Ukrainian scientists' researches.

It offers and seeks English lecturers working at non-linguistic faculties at the universities how to improve the English teachers' qualification at the university for making students' level of English higher.

At the same time, the analysis of the scientific papers on the mentioned problem brought us to the conclusion that the issue of teaching English grammar through bilingual comparativistics at the university level remains unsolved, although the problem of improving students' foreign language communicative competence at non-linguistic faculties of the university becomes topical.

The subject of the research is teaching the English language.

The object of the research is teaching the English grammar through bilingual Comparativistics at the university level.

The aim of the study is to substantiate theoretical aspects of teaching English through bilingual comparativistics at the university level and to determine the main approaches to English effective assimilation by students at non-linguistic faculties.

The following research tasks are defined in accordance with the topicality of the research:

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1) to characterize the conceptual and terminological apparatus of the problem of teaching English through bilingual comparativistics at the university level.
2) to specify advantages and disadvantages of teaching English through bilingual Comparativistics.
3) to identify factors to prevent interference.
4) to determine an integrative educational activity that synthesizes the essential conditions for teaching the English grammar through bilingual comparativistics.

Literature review

Firstly, it should be noted that *comparativistics* is a science that studies processes by comparing them (Azanova & Pogosova, 2019). Secondly, *bilingualism* in Linguistics means the ability to speak both languages native and foreign ones at the same time. It came from Latin bilingua – "*bilingualism*" (Who are bilingual persons?, 2022). Thus, scientist U. Weinreich in his work "*Language contacts*" states that bilingualism refers to the ability of using two languages in turn and their use depends on the conditions of the language communication (Weinreich, 1979). Thirdly, researcher V. Belyanin distinguishes that there are two kinds of bilingualism: the natural (a native language) and the artificial (educational) ones emphasizing on the fact that if we learn English with the help of the latter, the foreign language must be learned applying forceful efforts and using special methods and techniques (Belyanin, 2008).

Azanova and Pogosova explore the issues devoted to polylinguistic teaching foreign languages. The authors showed several multilingual lessons, the analysis which helped them to show special features of the communication skills formation and main approaches of work in teaching German based on English. It led the authors to the conclusion about the positive influence of FL2 in teaching FL1 and vice versa. Azanova and Pogosova believe that polylinguistic lessons help to overcome difficults connected with interference FL1. (Azanova, Pogosova).

Ruzhnitsky and Potemkina's article covers the analysis of bilingualism as it relates to linguodidactics and the language personality theory. The author gives a detailed analysis of the structural differences between a native language personality and the second language personality and desribes a model of bilingual personality formation.

Scientist Shcherba considers methods of teaching foreign languages. The author paid his attention to peculiarities of teaching English grammar, especially, to a correct word order in an English sentence and parts of speech for their correct using in the foreign written and oral speech.

Velichkova and Abakumova devoted their article to the problem of creating early artificial bilingualism from Psycholinguistics point of view and a theory of

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the speech activity. Basic principles and approaches to the organization of the process of early bilingualism establishment are presented.

The article written by Patt reveals the meaning of a concept of comparativistics: what it studies, problems of this discipline and its key ideas.

Vincha shows peculiarities of bilingualism in human thinking. The author considers that the human brain is adapted to multilingualism through the evolution.

The study of Khaliyeva is particularly important for our study which is devoted to a problem of teaching how to understand oral foreign speech in the interlinguocultural communication based on the development of both linguistic and cognitive consciousness. Weyranht studies the problem of a language mix in his research written on 209 pages, which addresses to an issue of how to avoid interference when a foreign language is learned, that is why the psychological side of bilingualism in modern researchers on the topic of the language interaction is promoted to the fore. So, considering various aspects of learning a foreign language: phonetics, grammar and vocabulary, Weinreich uses the same methods of analyzing cases of substitutions and displacements old elements with new ones and carefully separates these issues from "non-linguistic conditions".

Methodology

Due to the need of exploring theoretical notions and defining the concepts "bilingual comparativistics" the research of scientific literature was organized using such methods as *the deconstruction method* which takes into account such criteria as preserving the context of text meaning from primary sources and its correct use in the scientific research; *the method of apperception* which helped the research to be supplemented with the new information from other sources related to the chosen topic of the scientific project; *the descriptive method* allowed to highlight the key words in the study for substantiating authors' points of view relying on them.

The data were collected by performing the content analysis of scientific literature via the Internet as electronic media in accordance with such criteria as the definition of other researchers' achievements in the studied field of knowledge and determination of different points of view on the problem studied for defining perspectives of our research.

So, a theoretical sampling was used as most appropriate type of sampling for the grounded theory research to select new research ideas, text-books, documents. It includes a scientific study by Vayrankht on 209 pages, scientific articles such authors as Azanova and Pogosova, Shcherba, Velichkova, Winch, Ruzhnitsky and Potemkina, Patt, a synopsis of the dissertation for the degree of PhD in Pedagogy of Khalieva, a textbook on Psycholinguistics written by Belyanin.

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The statistical data were obtained the results of a pilot research project on the use of a bilingual system for teaching English grammar through bilingual comparativistics the second-year students of Faculty of Economics in V. N. Karazin Kharkov University. Theoratical aspects were studied at University of Latvia.

The study sample consists of two groups of the second year students from Faculty of Economics of V. N. Karazin Kharkov National University, Ukraine: a group of specialty "Finance and Credit" in the quantity of 21 students and a group of specialty "Entrepreneurship, commerce and exchange activities" in the quantity of 13 students. One group learned grammar only in English, the second group learned grammar rules through bilingual comparativistics during a semester.

Our dedication to gather and apply the knowledge with the aim of how to improve the English teachers' qualification for teaching English grammar at non-linguistic faculties of the university and based on a commitment of ethical principles based on the principles of research ethics: students' verbal information agreement was received for the respondents' voluntary participation in the study with full information about what this participation means for them and what they give their consent on before taking part in the study. Participants were informed about purposes, a process, methods, expected benefits, potential risks and study participants' rights before receiving the verbal information agreement. They had the right to stop their participation in the research at any time they want.

To confirm the effectiveness of the theoretically grounded statements of teaching English through bilingual comparativistics at the university level at the control stage of the experiment, all the indicators of students' mastery of English grammar were diagnosed using the following criteria: *motivative level* (motivation, positive students' attitude to teaching English grammar), *substantive level* (the development of analytical thinking), *procedural level* as a level of the formation of general educational skills (to be creative, educational: orientation in English grammar rules, correct oral speech, avoiding interference).

For testing students' *motivation,* the researcher used "Methodology for diagnosing the learning motivation of students" by Rean and Yakunin (Rean, Yakunin 2004). The motives of students' learning activity were studied according to the 5-point system and their significance for us using the following criteria *professional motives, motives for creative self-realization, educational and cognitive motives* (1 point corresponds to the minimum significance of the motive, 5 points to the maximum).

So, according to the first criterion, at the control stage of the experiment, the level of the formation of students' *positive attitude* to the process of learning English grammar was defined. Conductive interviews, the observation after students' work in classes and studies of that activity were carried out by researchers. It should be noted, that after analyzing the data of conductive interviews and the

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observation after students' work in classes, positive changes as for students' development of the grounded motives were highlighted. The students became more and more motivated and oriented towards mastering new knowledge and getting excellent marks.

Thus, for checking the level of *orientation in English grammar rules* according to the corriculumn learned during the semester, authors used *empirical* and *praxisymmetric* methods as testing. The material in tests was given in the form in which it was given by a lecturer in class or according to a textbook. The algorithmic application included the control of student's ability to use rules for solving typical tasks of the subject studied only within a specific section of the training course. The main evaluation criteria was to do tasks correctly and meaningfully. The tests included written tasks to check students' knowledge on English grammar. The maximum number of points was 20. *A recognition test* was proposed, in accordance with which the control of student's ability to select (recognize) the necessary information from the proposed variant of the task. The student received one point for the right answer. The forms of the control of students' results for the semester were two current written tests and a final written test.

The examination of students' formation of speaking skills was done with the aim to evaluate students' communicative and speech competences taking into account the linguistic correct using grammar rules in their *oral speech*. The main criteria of students results evaluation is student's ability to reproduce the required knowledge by his memory without explaining it. There was no external help. Students' knowledge was evaluated taking into account correct using of the vocabulary and grammar studied (max. 20%). The evaluation criterion was considered to be a correct answer without any grammatical and lexical mistakes. Thus, the communicative task was considered done. The forms of our test control were the oral presentations giving in two current tests and final one.

The test method was used to check students' ability to *avoid interference* in English. The main evaluation criterion was to do the paraphrasing giving phrases in the task correctly. One point was given for one correct paraphrasing; 0 points were given for incorrect paraphrasing with making a mistake or without any answer. The maximum number of points is 20. The forms of control of students' achievements for the semester were to current written tests and a final one.

The method of doing non-standard task was applied to test the development of students' *analytical thinking* and *creativity*. The task was creative requiring more complex mental activity such as analysis, synthesis, comparison, abstraction, generalization. Students must master operations and methods of analysis to develop their *analytical thinking* and *creativity* during their period of training at the university. So, the task is to make a mental memo scheme on an English grammar rule obtaining the information logically and analytically.

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Also, we relied on the theory of divergent (creative) thinking by Gilford (Gilford, 1967), according to which four main criteria for evaluating students' creative thinking were identified: 1. "Fluency" – the ability to produce a large number of ideas; 2. "Flexibility" – the ability to apply a variety of strategies in solving problems; 3. "Originality" – the ability to produce unusual, non-standard ideas; 4. "Development" – the ability to develop non-standard ideas in detail. Scored 1 point for correctly presented scheme using grammar and 1 point for creativity. Forms of control were carried out tasks throughout the semester (Gilford, 1967).

When processing the results of all types of testing, the average score of the indicators was taken into account. On the basis of the received results of the research, the control data of the students of the experimental and control groups were insured. They are giving in Table1.

Results

The bar chart shows (Fig. 1) the percentage change of students' test results in group A in which English grammar was learned through bilingual comparativistics and in group B in which English grammar was taught only in English from the beginning of semester in September and to the end of the semester in December.
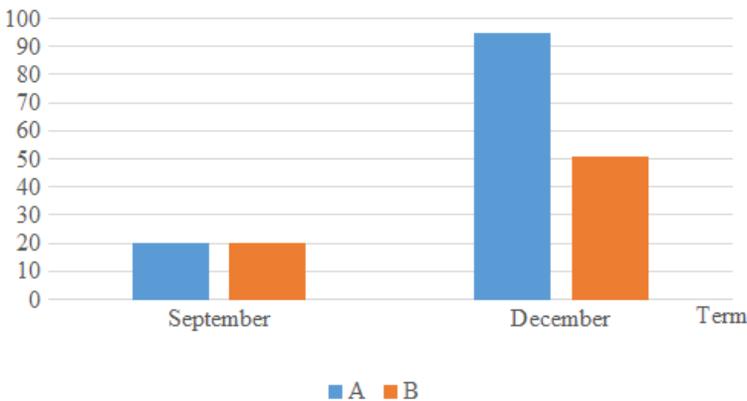

Figure 1. The indexes of students' test results of mastering English grammar during the semester from September to December, %

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In September the index of students' test results (enter testing) (%) on mastering English grammar was the same in both groups about 20% because of the level of knowing certain grammar rules learned by some students beforehand at school.

As it is shown at the end of the semester in December group A, which learned the English grammar through bilingual comparetivistics had the highest total share of test results 94%. The total share of test results in group B, which only learned the foreign grammar in English, was only 51% in December.

So, by the end of semester in Deember group A had the highest index of students' test results among two groups at 95%. Group B had the lowest one at 51%. The good results in mastering English grammar through bilingual comparativistics in group A are 43% higher than in group B in which students learned English grammar only in the foreign language.

The table compares data about the indicators of effectiveness (%) of teaching English grammar through bilingual comparativistics in group A and teaching English only using the foreign language in group B and total correlations index (%) after receiving results of a pilot research project at the end of the semester.

The following indicators are *motivation, positive students' attitude to teaching English grammar, the development of analytical thinking, creativity, orientation in English rules, correct oral speech, avoiding interference* were diagnosed.

So, *motivation* is 62% higher in group A than in group B.

P*ositive students' attitude to learning English grammar* is 23% higher in group A than in group B.

The development of analytical thinking is 53% higher in group A than in group B.

Creativeness is 58% higher in group A than in group B.

Mastering English rules is 55% higher in group A than in group B.

Correct oral speech is 46% higher in group A than in group B.

Avoiding interference is 51% higher in group A than in group B.

It is noticeable that the proportion of all indicators in group A taking up English grammar using bilingual comparativistics is almost double the percentage of group B.

Overall, the performance indicators of the effectiveness of teaching English grammar through bilingual comparativistics at the university level at the end of the semester giving in Table 1 show that results in group A are on average 49% higher than in group B in which students only learned the foreign grammar in English.

So, the results, given in Figure 1 and Table 1, show that teaching English grammar through bilingual coparativistics improves students' language competence to carry out the necessary communication tasks according with correct grammar. Thus, educational bilingualism in English classes of non-linguistic faculties of the university is more effective than monolinguizm.

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Table 1. Descriptive statistics (%) of the criteria of the indicators of students' mastery of English grammar during the semester

Criteria of the indicators of students' mastery of English grammar	Group A	Group B	Correlations, %
1. Motivation	97%	35%	62%
2. Positive students' attitude to teaching English	98%	75%	23%
3. The development of students' analytical thinking	85%	32%	53%
4. Creativity	75%	17%	58%
5. Orientation in English grammar rules	95%	40%	55%
6. Correct oral speech	83%	73%	46%
7. Avoiding interference	85%	34%	51%

Note: average index correlation = 49%

Discussion

There is no doubt that students have a strategy for learning English in the natural, interactive environment using both languages their native language and a foreign one.

Meanwhile, researchers Velichkova and Abakumova confirm that a person is biologically adapted to the code acquisition and for using some codes (language systems) in his speech: another system of codes (a foreign language) has the same functions as the first one (a native language) (Velichkova & Abakumova, 2019).

Also, the practice shows that the concept acquisition is specific for a foreign culture and occurs with the help of the native language as a main tool of the human cognition. This was noted by scientist Shcherba who says that a student only understands a foreign phenomenon when he manages to find an equivalent for this phenomenon in his native language (Shcherba, 2014).

It should be noted that researchers Ruzhytskyi and Potemkina also confirm that a foreign language speaking personality is created on the basis of a native language speaker. A person who is taught a foreign language perceives the foreign speech he learns through a prism of his native language automatically. He "translates" some information from an unknown code into known one using the existing conceptual base (Ruzhitsky & Potiomkina, 2015).

So, linguistic researchers show that while the foreign language is being learned, the mixed bilingualism is being formed which is characterized by the presence of the common semantic basis of two languages in which specific features of a foreign language culture are explained to a person through the meanings from the native language.

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It should be noted that a common substrate from both the native and foreign languages provides main impetus for their interaction (a place of the two languages contact) between bilinguals' linguistic consciousness and linguistic activity. Units, that have certain common features, forms or a content always interact. The depth of their interaction depends on how two language structures are close to each other.

Thus, scientists emphasize that first of all the emotional interaction serves for the successful development of the linguistic interaction between two languages (obtaining the sufficient volume of the language material (input)) which reflects the units of this foreign language clearly in the hierarchy of their formation in language ontogenesis and the nature of the language material representation which can be called compressive and it is for the successful development of the process of the linguistic bilingual interaction. It refers to the acquisition of prosodic and segmental units of the spoken language, lexical and syntactic units in their psycholinguistic interrelationship taking into account their features in the natural language ontogenesis, but it is shortened by the time of their acquisition. This factor is a compressive process of the presentation and assimilation of a non-native language in accordance with the natural consolidation of the language (Velichkova, L. & Abakumova, 2019).

In particular, scientists found out that our brain can find language patterns subconsciously, that's why when you don't think about the logic of the foreign language communication, you achieve better results, and those students or teachers, who try to study out the language logic and identify certain patterns, always show the worst results (Vinche, 2016).

Therefore, the success of learning English grammar through bilingual Comparetivistics using two languages and a content at the same time does not require the logic, understanding occurs subconsciously.

But, some linguists believe that "speech porridge" appears in the human brain when we learn English using our native language at the same time. It seems to us that words are confused with each other and languages interfere with each other, too. Philologists call this phenomenon as interference.

Thus, researcher I. Khalieva confirms that interference between two language systems inevitably occurs at the cognitive level in the process of learning a foreign language (Khalieva, 1990).

However, we note that students should learn how to overcome a confusion between their mother tongue and English, formulate sentences clearly and express their thoughts in English correctly.

It should be noted that interference is easier to be prevented when you pay your attention to similarities and differences between two languages in the process of teaching English grammar using any content: learning words and phrases from the English content using sound associations to these words, explain

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foreign grammatical phenomena in students' native language, but examples only should be given in English. This makes it possible to understand and take into account the peculiarities of using certain English phrases or grammatical constructions and rules.

As practice shows, after explaining English rules in students' native language with the examples in English, a recipient makes a breakthrough in understanding the material learned orienting in complex grammar rules and starts making correct English grammatical constructions using each language as a separate unit, comparing and understanding cognitive and linguistic components at the same time.

It should be understood that there are no almost complete and systematic descriptions how intensively the native language influences on the language balance when English grammar is learned. Moreover, extensive connections between any native language or English cause differences in "mobility" of the penetration of various grammatical structures into the foreign speech. Although, there is no any complete isolation between various factors of the grammar: the influence of the native language corrects the effect of structural units of the foreign language grammar and vice versa.

But, as a number of scientists think, bilingualism lets the broadest consequences of the grammatical structural interaction of English and any native language occur in the image perception of certain foreign language grammatical structures and their reproduction (Azanova & Pogosova, 2019).

Thus, in our opinion, the mobile function of the English grammar rules which are learned through bilingual comparative principles can be implemented: firstly, by an associative mnemonic scheme as a system of the introduction and semantization of the foreign language phenomena when the difference and similarity between two languages (native and foreign ones) are understood through the image perception of a certain English grammar rule. This approach can be characterized as "similarity and difference". Where "similarity" is a certain number of some English grammar structures included in a mnemonic scheme, and "difference" is the native language in which the description of these structures is presented or a mental image that is clear in both languages.

For example, when grammatical tenses are learned, students can imagine the Present Continuous Tense as a mental image of a sendglass, The Present Perfect Tense can be imagined like a glass of brewed coffee, The Present Simple Tense as a balance wheel. It should be noted that mnemonic schemes are understandable for everyone and can be remembered easily thanks to associative thinking, when two brain hemispheres work at the same time: the left one, which is responsible for logical thinking, and the right one which is responsible for image thinking. That is why the English tenses can be understood cognitively. So, as our practice improves, making mnemonic grammar schemes by students develop their creativity and arouse their interest to the process of learning.

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Besides, the approach of learning English grammar through mnemonic schemes correlates with K. Ushinsky's principle of the educational processes in accordance with the nature, in which learning a language is equated to the development of students' existing language ability, which determines goals of language learning including the most universal one as the accelerated development of thinking (Ushinsky,1998).

The algorithm of work with mnemonic schemes includes teacher's explanation of a meaning of a certain English grammatical category (its cognitive content) in the native language and comparing with analogues from English. Then students continue mastering actions of analyzing foreign language categories step by step using mnemonic schemes and what reflects the cognitive-linguistic content of these categories. Later, when the action of the analysis a foreign language phenomenon becomes automatic, students can use mnemonic schemes as reference material.

But, the English grammatical categories is worth to be presented to students as a complex of signs and rules like mnemonic schemes. The phenomena of subconscious grammar (for example, language clichés) makes sense to be presented in the form of certain units making them according to the situation in which they are usually used, comparing them with the units of the native language being relevant to this situation. In this case we can hope that mechanisms of creating any foreign language communication will be taken without a deformation of any information from the English content and without "fitting" it to external similar phenomena of the native language. Thus, the foreign grammatical phenomenon is revealed for studying categorically, that is in the complex of essential features and links between them which let students to orient in the English grammar.

Therefore, the results of our study let us confirm that firstly, learning English through bilingualism provides the creation of certain constructions in the student's mind which represents the system of understanding English not only at the verbal-semantic level, but also at the cognitive and pragmatic levels, helps to develop students' analitical thinking and creativity.

The presence of the linguistic environment of the native language allows us to conclude that learning some linguistic elements in English should be provided basing on the native language in order to prevent interference. Thus, in order to achieve this goal, at the stage of updating any content, students of non-language faculties can compare, for an example, a word order in the English and native language sentences, indirect speech, Simple and Continuous Tenses with the same structures in their native language analyzing a degree of the correspondence between the linguistic phenomena of both languages, differences characteristics in English and native language can be found, too.

Secondly, if we think about the nature of teaching any educational grammar material in English and peculiarities of its acquisition we should speak about the

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development of the language ability, which occurs in the process of using the native language in any educational process.

Such a visual demonstration of similarities and differences of grammatical and syntactic features from the native and foreign languages helps to the English language acquisition of the subject content more effectively and uses learned grammatical structures in the communication correctly and also motivates students to learn this foreign language.

Therefore, each of these stages is related to the previous and the following ones and determines a final effect of mastering the foreign language phenomenon which is learned under the conditions of the native language dominance. So, our hypothesis is supported by our results.

Further our research will be devoted to the description of the conditions for the formation of educational bilingualism in linguodidactics during the process of teaching English students of non-linguistic faculties of the university.

Conclusions

So, the author came to the conclusion that the teacher's actions to attract the students' attention and interest to learn English grammar through bilingual comparativistics at the university level can be provided by the formation of the general semantic system which is the same in both languages (native and foreign ones) and in which meanings of foreign language concepts are revealed for students through concepts in their native language at the verbal and semantic level, as well as at cognitive and pragmatic ones that show such students' results in learning English as developing their creativity, analytical thinking, helping them to speak English correctly avoiding interference.

The significance of the results show that teaching English grammar through bilingual comparetivistics at the university level allows students use complex English grammatical structures correctly in their error-free intercultural communication, helps them to master British English at level B2 and become perfect specialists in their future professional life.

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Student Teachers of English on the Lookout for Good Teaching

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ABSTRACT

Education has always been a subject to changes structure and content wise; its quality has been an issue all the time. In Latvia, the recent reform named School 2030, which essence is a competence approach to the curriculum, is introducing its requirements. Additionally, the government has planned to introduce a system monitoring the quality of education by 2023. Consequently, questions like what a good school, teacher and teaching are gain certain attention. The particular qualitative approach research concentrates on finding out student teachers' answers to these questions as core values they remember to be the most significant ones to make them think of their schools, teachers and their teaching as good. The aim of the research is to examine how student teachers of English who have begun their teacher education studies recently perceive good teaching. To provide answers, they filled out Personal Statement – an introductory part of the European Portfolio for Student Teachers of Languages. The research sample of the case study consists of 55 second and fourth year full and part-time students who have decided to become teachers of English. They are studying at the faculty of Education, Psychology and Art, the University of Latvia. To analyse student teachers' opinions, content analysis was used. The data allows concluding that student teachers' perception of good teaching is characterised by three key elements: good classroom management techniques, relevant teaching methodology and teachers' personalities. Furthermore, student teachers of English are of the opinion that in good teaching environment teachers take into account their pupils' personalities. The same ideas prevail in the answers revealing what student teachers want to master in their studies. That implies student teachers of English long to see academic staff at the university as role models of good teaching.

Keywords: European Portfolio for Student Teachers of Languages (EPOSTL), methodology of English as a foreign language, reflection before action, student teachers of English, teacher professional identity

Introduction

Education is a multifaceted notion. As a social science, it entails and represents several co-existing parts. To mention a few, education system, schools, teaching and learning, and, of course, teachers, pupils and parents. Education as a system has undergone serious changes in all the times and all the countries trying to reach its best form to comply with certain quality standards. In Latvia, the recent education system reform is called Skola 2030 (English: School 2030) and its essence is to introduce a competence approach to the curriculum. A benchmark for the quality of education in this case is considered to be pupils who as a result of their schooling become ready for real life having acquired necessary knowledge, skills and attitude, having honed their transversal skills and developed a core of vales and virtues (School 2030). Consequently, the new approach to the curriculum asks for a new quality monitoring system. The Ministry of Education and Science of the Republic of Latvia (Latvijas Republikas Izglītības un Zinātnes Ministrija IZM, 2020, 4) has proposed a scheme consisting of four basic categories which have to be evaluated to determine the quality of education in each particular educational establishment – compliance with the goals, quality of teaching and learning, inclusive environment, and good administration. Each of the four categories is divided into three subcategories. Within the scope of the present article its author being a teacher educator, the category of quality of teaching and learning is of importance as out of its three subcategories it represents two teacher education in general deals with: the quality of teaching and learning and teachers' professional capacity. More detailed criteria for both of them can be traced in the standard of the profession 'Teacher', which gives a comprehensive look on responsibilities and tasks teachers have to perform in Latvia. For example, to plan and carry out teaching, assess pupils' progress and learning achievements, participate in continuous professional development, and be a part of the educational establishment (Valsts izglītības un satura centrs VISC, 2020). Taking into account the amount of requirements teachers face to prove the quality of the work they do is good, teacher education programmes introduce students to them gradually. Moreover, even prior to setting out in the professional field during teaching practices, students are helped to become aware of what 'good teaching' could mean by inviting them to participate in reflection-before-action activities. The emphasis of these activities is to let students imagine and visualise what, why and how will be done in their professional practice (Loughran, 2002; Conway, 2001). With the help of university faculty and school mentors, it fosters student teachers' turning into reflective practitioners (Kowalczuk-Waledziak et al., 2018; Latkovska, 2015; Freese, 2006). Furthermore, reflection-before-action serves as a basis for student teachers to see themselves as practitioners in realistic circumstances avoiding having shattered images – discrepancy between unrealistic and realistic vison of future professional prospects (Cole & Knowles, 1993).

Building their professional identity with the help of reflection, student teachers understand significance of teacher professionalism, which ultimately means 'good teaching' (Miķelsone & Odiņa, 2020; Dassa & Derose, 2017; Urzua & Vasquez, 2008; Graham & Phelps, 2003).

To find out what 'good teaching' means for student teachers, is the aim of the particular study as its author is a language teacher educator whose task is to help student teachers of English comply with requirements that in future will prove their professional quality. In order to reach the aim of the study, the author first analysed theoretical and methodological literature on what constitutes good teaching and learning of English as a foreign language. Literature analysis proves that in spite of reforms in education and changing times, good teaching continuously involves three main constituent elements which are a teacher's personality, a teacher's knowledge of the language itself and a teacher's skills to apply relevant language teaching and learning methodology (Johnson & Golombek, 2020; Goksel & Rakicioglu-Soylemez, 2018; Darling-Hammond, 2006; Gabrielatos, 2002). Gabrielatos (2002) provides a visual comparison of the relationship of the three elements to those of an equilateral triangle, which is stable only if all three sides are of equal length. He proposes an idea that such interaction of the three elements fosters efficiency of language teachers. Darling-Hammond calls it 'a vision of professional practice' (2006, 5) which helps student teachers see the essence of teaching as a profession and encourages them to think about their pupils' rights to learn in a democratic environment. Concentrating on pupils and their learning is also a key factor for good teaching in Latvia nowadays according to School 2030 as only a teacher who thinks about rapport with pupils can help them flourish as personalities and become competent language users.

Methodology

After the analysis of theoretical and methodological literature, student teachers' of English opinions on good teaching and good teachers were gathered. The research method of the study is a case study as a practice-oriented approach to small-scale education research (Cropley, 2022; Hamilton, 2018). The data collection method is a document analysis – student teacher's reflection on their prior learning – answers to open questions answered in writing as an assignment within the study course on foreign language teaching and learning methodology. Prior to completing the assignment, student teachers were informed their answers would be a part of the case study. Student teachers who agreed to be participants of the study submitted their answers to the Moodle system of the University of Latvia, while those who had their reasons not to agree, skipped the assignment. Qualitative content analysis was used to analyse the submitted work and define student teachers' emerging answer patterns (Cropley,

2022; Cohen et al., 2007) on what they consider to be good teaching and good teachers marking the constituent elements of personality, methodology and language knowledge based on the scientific and methodological literature analysis. Respective codes used for student teachers' answers: P = personality, M = methodology, L = language.

Overall, 55 second and fourth year full-time and part-time student teachers (n = 55) representing a professional bachelor's study programme 'Teacher', a sub-programme 'Teacher of English' at the faculty of Education, Psychology and Art became participants of the current study. It was a non-probability convenience research sample (Cohen et al., 2007). It consisted of 49 female and six male students and 53 local and two Erasmus students.

To provide their opinions, student teachers completed a part of a Personal Statement – a first part of the European Portfolio for Student Teachers of Languages (EPOSTL), which is an intellectual output of one of project teams of the European Centre for Modern Languages (ECML). EPOSTL as a reflection tool for teacher education 'encourages to reflect on the competences a teacher strives to attain and on the underlying knowledge which feeds these competences; helps prepare for future profession in a variety of teaching contexts; promotes discussion among student teachers, teacher educators and mentors; facilitates self-assessment of developing competence; provides an instrument which helps chart progress' (Newby et al., 2007, p. 5). The open questions student teachers answered in a free form in writing, and which content was analysed to reach the aim of the present study were as follows:

1. As learners in school, you already have had a lot of contact with teaching. What aspects – teacher's qualities, practices etc. – of your own language teaching might influence how you wish or do not wish to teach? Mention positive and negative examples of being taught.
2. What do you wish to do at school as a teacher?
3. To your mind, what five characteristics are important for a teacher?

Results

At the beginning of the analysis of student teachers' reflection, it has to be mentioned that they mainly wrote about female teachers and male teachers were only mentioned five times. Therefore, there is no teacher gender difference taken into account in the present study. As regards student teachers' reflection on their positive experiences of being taught at school, the majority of them belong to the code of personality P = 59. Most recurring thematic threads are 'patient' and 'understanding' followed by 'approachable' and 'helpful'. In general, it may be said student teachers value rapport with teachers. Separate expressions exemplifying student teachers' opinions: 'the teacher didn't label us',

'we felt safe and weren't afraid to make mistakes', 'our thoughts were taken into account' and 'the teacher taught us more than English – she taught us life'. Second most often mentioned code is methodology $M = 50$. Key thematic threads are 'creative' and 'prepared'. It may be concluded that student teachers appreciate if teachers do have lesson plans, but at the same time they are flexible to adapt to pupils' interests and needs. Separate examples of expressions for this code are 'the teacher always had heaps of materials being ready to use all of them should the need arise', 'the teacher knew how to challenge us – she offered different kinds of activities'. Emphasis of classroom management skills belong to the methodology code as well because student teachers' expressions, for example, on classroom dynamics and discipline are combined with methodology: 'she organised group work so that we could help each other to learn new vocabulary' or 'a combination of strict classroom rules and well-planned lessons was awesome'. The code of a teacher knowing the language is $L = 27$. Two recurring thematic threads are 'knows English herself' and 'speaks English in lessons'. On the one hand, the mentioned examples reveal a positive trend of knowledgeable teachers who speak the target language with pupils. While on the other hand, it may be inferred that there are also teachers who do not do that, which is worrying. To mention an expression standing out among others and not directly corresponding to any of the codes, is a description of the teacher's appearance: 'Her looks! Great! She looks like a wife of the president!' Even though there is only one expression like this, it is still a reminder that besides personality and methodological and language competence teachers should look decent.

Being asked to think of their negative school experience, student teachers' answers again show the importance of a teacher's personality $P = 50$. Typical expressions for the are 'scary' and 'demotivating'. Unfortunately, student teachers write about teachers whose lessons are not psychologically safe for pupils – they are labelled and not listened to. In the worst cases, screaming and others signs of emotional bullying are mentioned. These expressions serve as warnings for teacher educators to be good role models for student teachers to help to direct their negative experiences of being taught to positive ones. Methodology as a code is second most often mentioned by student teachers $M = 44$. There are such recurring thematic threads as 'just checking answers' and 'no explanations'. That means teacher educators have to help student teachers become aware of and learn a variety of methodological approaches to choose from when getting ready for their subject lessons. The language code is mentioned two names, which is good because it allows thinking that in cases teachers are not pleasant personalities or are incompetent teaching and learning methodology wise, they at least use good English themselves. Both expressions for the code highlight a teacher's unwillingness to admit to having made a language mistake.

To sum up good and bad experiences of teachers and their work student teachers have described, resemble the constituent elements of good teaching and teachers emerging from the literature analysis. However, there is no equilateral triangle in the case of the present study as the sides of personality and methodology are longer than the language side.

When asked to think about things they would wish to do at school as teachers, student teachers give a preference to methodology $M = 52$. They wish to help pupils learn and 'see learners' development' and 'work creatively'. Among the expressions of the methodology code, there are also expressions that concern information technologies because students name them as a 'brilliant tool to enliven any lesson plan'. Separate student teachers mention separate components as main things they would love to work on as teachers, such as helping pupils master particular spoken and written reception and production skills or the overall linguistic competence. Personality as a code is mentioned is $P = 33$. A recurring thematic thread for the code is 'rapport with pupils'. There is also a thematic thread of 'importance of my own lifelong learning' which in context emphasises student teachers' wish to grow as personalities – encompassing a broader scope of interests besides teaching. Language does not emerge as a code in the particular question. That may mean that future teachers of English do not think about the language as an individual element because they see it as part and parcel of methodology – honing their language competence simultaneously with the methodological competence.

In the third question on five important characteristics of teachers, student teachers make the code of personality stand out $P = 91$ once again emphasising 'patience' and 'understanding'. Besides these two, there are such thematic threads as 'open-minded', 'passionate' and 'respectful'. Methodology is the second code $M = 61$. The dominant thematic threads here are 'lesson planning' and 'creativity'. If in the previous question the language code on its own is rare, in this question student teachers do mention it $L = 34$. However, they rather emphasise a teacher's linguistic competence than their oral and written reception and production. What makes the author of the article think, is the student teachers' idea that an important characteristic feature of a teacher is 'being ready to take a break and ask for help' ($n = 6$). This reveals a healthy psychological approach to one's health and, in fact, could be counted among the expressions of the personality code as taking care of oneself means being able to act better for others as well.

Conclusions

Good teachers and good teaching have always been a significant matter as it gets the society to the ultimate goal of education – competent pupils which turn into competent society. Therefore, the quality of education, teaching and teachers

has always been measured. An issue, however, is that what makes the quality 'good' is a changing matter. To find out how good teaching and good teachers are viewed in the 21st century, the author of the article analysed relevant scientific and methodological literature and concluded that three constituent elements are a teacher's personality, teacher's methodological competence and the knowledge and competence of the language. Although according to the literature analysis, all of the three components are of equal importance, the analysis of the opinions of the student teachers' of English show that they regard a teacher's personality and competence in teaching and learning methodology to be more important leaving language knowledge behind or they do incorporate it within the methodology part. This is a sign for teacher educators, first, be good role models and, second, plan teacher education programmes the way it is possible for student teachers develop as personalities and learn the methodology of teaching and learning a foreign language while improving their own language competence – linguistic competence and oral and written reception and production. A new trend, even if it is not tremendous, of the perception of good characteristics of teachers among student teachers can be highlighted in the present study. In particular, student teachers think that teachers should care not only for their pupils' well-being in lessons and in school in general, they should be able to take care of themselves as well. This demonstrates that sustainability of a teacher's inner sources linked with the idea of good teachers and good teaching may be a topic for further exploration.

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The English Language as a Factor Influencing Foreign Students' Learning Outcomes in Higher Education

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ABSTRACT

English language skills are an important factor that should be assessed in the context of foreign students studying for a degree in higher education in another country. Previous research has mainly been conducted in Australia, New Zealand and the United Kingdom, as these are global study destinations. The aim is to investigate whether English language skills affect foreign students' learning outcomes in Latvia. The research question intends to find out what the English proficiency is in class, determine the English test at the time of admission, and whether the previous learning of English at the general level of education affects the learning outcomes in higher education. The research sample involves South Asian and Central Asian students. In the first stage of the study, the focus group method was used with the academic staff to find out English proficiency in class. In the second stage, interviews were conducted with representatives of higher education institutions to determine the English test at the time of admission. In the third stage, interviews were conducted with nationals of India, Sri Lanka and Uzbekistan to find out the English language training of their countries of origin in general education. As a result, it can be concluded – foreign students' use of English differs according to the school (public or private) where they have studied general education before. Lecturers and representatives of higher education institutions indicate that English is not the determining factor, but rather knowledge and understanding of the topic and content regarding learning outcomes, while nationals agree that English is the determining factor affecting learning outcomes.

Keywords: higher education, foreign students, teaching methods, English language, western education, support

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Introduction

For foreign students studying full-time for a degree in another country, English is an important factor that could affect the learning outcomes. Students rely on their previous English language training as a foundation on which to build their higher education studies in another country. Language barriers can hinder socio-cultural adaptation, cause misunderstandings and affect the academic achievement of foreign students. Adjustment problems are mainly related to English language skills and culture (Ballard & Clanchy, 1991; Wu et al., 2015). Language barriers further exacerbate the difficulty of adapting to the local colloquial language (Robertsons et al., 2000; Sookrajh et al., 2005; Wang, 2003). English as a factor affecting learning outcomes is common among Australian researchers, as English is the mother tongue of local students in Australia, but English is not the mother tongue of foreign students who come to study, mainly from Asia. In Australia, problems arise due to the poor written and spoken English skills of incoming Asian students. Several authors have conducted research in higher education institutions in Australia and New Zealand focusing on the language aspect (Bayley et al., 2002; Bretag et al., 2002; Holmes, 2004, 2005; Johnson & Kumar, 2010; Kukatlapalli et al., 2020; Sawir, 2005).

There is extensive literature on the English proficiency of foreign students from East Asia, but there is little research on the English proficiency of students from South Asia and especially Central Asia. Each of these regions has its own historical background, which has influenced the course of the development of the English language. The novelty of this study is that the research sample is based on foreign students of South and Central Asian origin. Another novelty is that the research tends to investigate whether English training in general education in students` country of origin affects learning outcomes in higher education.

English in academia

This chapter will discuss other conclusions of the author regarding the importance of English in an academic study environment and the importance of language training in the students' country of origin.

In the academic environment, students feel a lack of confidence in their English. They have an incomplete understanding of what the lecturers say in class and feel dissatisfied with their ability to express themselves orally in the presence of other classmates. Several foreign students identified their lack of English language skills as a major source of learning difficulties (Hellsten & Prescott, 2004; Robertson, 2000; Wong, 2004). Students felt uncomfortable expressing themselves orally because of their accent and English language skills (Sanner et al., 2002). Foreign students at a Canadian university had difficulty with note-taking, vocabulary, understanding lecture content and heavy reading loads (Mendelsohn, 2002).

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There are studies available on international students studying in Australia. Sawir (2005) finds that the poor English language skills of students in Vietnam, Japan, Hong Kong, Indonesia and Thailand are the cause of outdated pedagogical English didactics in the students' countries of origin. The learning difficulties faced by students studying in Australia are based on the shortcomings of students' previous learning experiences – overly focusing on grammar and reading in teacher-led classrooms rather than developing conversational skills. Sawir (2005) suggested that Australian academic and administrative staff should be more sensitive to the language difficulties faced by international students. Academic and administrative staff are responsible for foreign students; they should better understand the root causes of their language learning problems by getting to know the students' previous experiences and learning habits. In turn, this will allow lecturers to develop better programmes. Countries of origin need to develop better communicative teaching practices, using a variety of interesting methods that will create excitement in students, beyond just learning grammar and vocabulary. Most of the Indian students felt confident about their English skills, but generally suffered from a lack of confidence when interacting with Australians. Some students said that they have adapted well to understanding the Australian accent, but are very aware that they also have an English accent (Johnson & Kumar, 2010).

It should be concluded that the available literature should also be viewed in the cultural aspect of the country in which the research was conducted. To date, most research has been developed in Australia. Considering this, it should be borne in mind that in Australia, English also has its own specific pronunciation, which is an aggravating factor in that students who learn and understand English suddenly do not understand it.

Academic staff also criticised foreign students' poor writing and critical thinking skills (Robertson, 2000). Bretag et al. (2002) and Bayley et al. (2002) found that, according to academic staff, foreign students from non-native English speaking countries were unable to participate effectively in the training discussion as required and their papers were often difficult to read and assess due to poor grammar.

Holmes (2004) concluded that the opinions of foreign students and lecturers did not always coincide. The professors' language accents, idiomatic expressions, humour and choice of examples in the lectures caused problems (Holmes, 2004). This was also found in the study of Ramsay (1999) where first-year foreign students at an Australian university had difficulty understanding lecture content. Lecturers spoke too quickly or gave insufficient information. Foreign students find the staff unfriendly, and say that they give poor directions in the courses (Dandy, 2009; Wang, 2003). Students say that foreign students tend to 'ask more questions' due to their poor understanding of English, but teachers

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and other students perceive them as 'stupid'. The lecturers do not understand the accent of the students, so they lose patience and become easily irritated. Incomplete knowledge of English was associated with a lack of intelligence. It creates fear in students, as well as a desire not to participate in discussions (Naidoo, 2018).

In recent years, students from China have had to face more complicated visa processes and students have had to meet relatively high requirements for English language skills, which is carried out with the aim of reducing the number of students with poor language skills, although this does not solve the problem itself (Townsend & Poh, 2008). Compared to students from China, Indian students have a better command of English, as English is an official language in India due to the historical ties with Britain (Levis et al., 2012).

There have been many studies asking students to self-assess their English language skills. For example, students' self-assessed writing and speaking skills were rated lower than reading and listening skills. Most (88%) indicated little difficulty in expressing themselves in English, but some (12%) found it moderately or very difficult. Students clearly indicated difficulties with writing, often related to paraphrasing, referencing, avoiding plagiarism and argumentation skills. Having never been asked to reference or cite sources before, students found that they could not write critically, which was highly expected (Gourlay, 2009; Holmes, 2005). Students acknowledged that university staff took it for granted that students would know what was expected of academic English writing (Kukatlapalli et al., 2020).

The aspect of the English language is not directed only towards the students, but also towards the lecturers, where the interaction of the parties should achieve the highest desired result.

English language and learning outcomes

Some studies have looked for a correlation between English language skills and learning outcomes. Learning outcomes refer to the measurable, demonstrable results of how a student has learnt. They can be assessed by the successful completion of course requirements, and grade point average.

Ramburuth (2001) concluded that the stronger the proficiency in written English, the higher the academic achievement among both domestic and international students in Australia. 76% of non-native foreign students were identified as requiring intensive support in English based on their written application. Additionally, another study showed that students with higher TOEFL (Test of English as a Foreign Language) scores experienced less adjustment difficulties, had more positive experiences, and felt more satisfied than those with lower scores. Beasley (1990) indicated that foreign students faced challenges in reading

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and writing, as well as difficulties adapting to Western educational traditions consisting of independent learning, critical analysis, and idea generation. These factors contribute to the reasons why international students do not achieve learning outcomes (Andrade, 2006; Beasley, 1990; Holmes, 2004). A study in New Zealand found that working hard does not necessarily mean good grades for foreign students from China. Students lacked discussion skills and had insufficient listening comprehension in lectures (Holmes, 2004). While students learnt from their mistakes, it affected student grades and learning outcomes (Kukatlapalli et al., 2020).

Few studies show that foreign students are academically successful and generally satisfied with their experience at English-speaking universities (Andrade, 2006; Berman & Cheng, 2001).

It can be concluded that in the studies so far, the negative influence is revealed in more cases, that is, the English language affects the learning outcomes in a negative way.

Background

The role of foreign students in Latvia

The Republic of Latvia is a country in the Baltic region of Northern Europe. The Bologna Process in Latvia was launched on 19 June 1999. Higher education in Latvia has three levels – bachelor's, master's and doctoral (Ministry of Education and Science, 2020). In 2020, 9,342 foreign students, which is 14% of all students, studied in Latvian higher education for the purpose of obtaining a degree. In the case of Latvia, the largest education importing regions are East Asia – India, Central Asia – Uzbekistan, followed by Central Europe – Germany, Sweden and Eastern Europe – Russia. 68% of foreign students come from countries outside the European Union (Overview of Latvian higher education in 2020, 2021).

Admission of foreign students in the context of English

The Ministry of Education and Science has defined the principles of good practice on attracting foreign students and delivering studies. If the previous education of the potential foreign student was obtained in other language, either an internationally recognised certificate is necessary or the higher education institution shall organise a test of the foreign language which certifies knowledge of the language in which the study programme is implemented, and the level of knowledge set by the higher education institution (Agreement on Good Practice of Attracting International Students and Delivering Studies has been signed between the Ministry and higher education institutions, 2017). Besides Cabinet Regulation No. 846 *Regulations Regarding the Requirements, Criteria and*

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Procedures for Admission to Study Programmes, universities and colleges check the foreigner's language proficiency of the relevant study programme to at least the B2 level according to approved methodology set by the regulations (Rules on requirements, criteria and procedures for admission to study programmes, 2006).

Foreign students are an important segment for higher education institutions and higher education internationalisation in Latvia. In order to improve the English language admission tests and the overall quality, improvements are constantly being made, which are reflected in the Agreement and in the Cabinet Regulation.

Methodology

Focus group method

In the first stage of the study, the focus group method was used by the academic staff-lecturers. Lecturers were selected and invited to participate according to the following criteria:
1) work with foreign students,
2) work experience of at least 10 years directly with foreign students,
3) work with students from different countries like (India, Bangladesh, Sri Lanka, Uzbekistan, Kazakhstan, Azerbaijan, Belarus, and Russia).

The purpose of the focus group discussion was to determine the English proficiency in class and whether English affects learning outcomes. 7 lecturers took part in it, with 5 lecturers representing the private education institution *Turiba University* and 2 participants representing the state university *The EKA University of Applied Sciences*, and the state university The *University of Latvia*. Participation was voluntary, and prior informed consent was given regarding the purpose and confidentiality. The focus group took place once in December 2021, online on the *Webex* platform. The length of the focus group discussion was 90 minutes. In the beginning of the focus group discussion, the respondents were introduced to the research aim and focus group discussion. The focus group was conducted in Latvian. At the end of the focus group, the moderator provided a summary and feedback on the answers received from the respondents. Then respondents reflected, confirmed or added to the content of their answers. After the focus group discussion, the moderator prepared a detailed interview transcript. This study used the thematic analysis approach outlined by Braun and Clarke (Braun Clarke, 2006). After the discussion, the researcher read the transcripts of the focus groups to gain an overall idea about the answers. The first step was to encode the obtained data, while in the second step the researcher organised the data in a meaningful and logical order. The researcher coded each segment of data related to it and also noted if something interesting and meaningful came up according to the research question. The researcher

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compared the codes and modified them if necessary before moving on to the rest of the transcripts. After generating the codes, the researchers moved to search for themes. The final step involved combining the analytical narrative and data extracts.

Interviews with higher education institutions

In the second stage, interviews were conducted with representatives of higher education institutions ($n = 10$) to determine English proficiency at the time of admission and whether English affects foreign students' learning outcomes. The representatives were chosen from universities where foreign students are most represented. 7 represented state universities, and 3 private. Interviews took place in Spring 2022 online, individually on the *Zoom* platform and by mobile phone. Respondents were informed that confidentiality would be respected and the results would only be available in aggregated form. The interviews were conducted in Latvian.

Interviews with nationals

In the third stage, interviews were conducted with nationals (same as the students) of India, Sri Lanka and Uzbekistan ($n = 3$) to determine the English language training of their countries of origin in their previous education and whether English affects the learning outcomes. The Indian national is a lecturer at Turiba University, the nationals from Sri Lanka and Uzbekistan are students. These representatives were chosen because they represent different countries and different positions.

Interviews took place in Spring 2022 online, individually on the *Zoom* platform. Participation was voluntary, and prior informed consent was given regarding the purpose and confidentiality. The interviews were conducted in English. An interview transcript was compiled for each interview as the first step. Each interview transcript was sent to the respondent to confirm that the opinion was accurate. After receiving the clarifications and approval, analysis of the interviews was carried out. The analysis included:
1) breaking down data into thematic codes,
2) drawing related codes into categories,
3) movement towards conceptualising meaning: exploring thematic relationships in response to research question (Galletta & Cross, 2013).

Results

The first paragraph of the chapter presents the results of the focus group on the lecturers' vision regarding foreign students' English proficiency in class. The second paragraph of the chapter reflects the results of university representatives

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regarding English at admission and during studies. The third paragraph reflects English training of students' countries of origin in general education.

Results of the focus group on the lecturers' vision regarding foreign students' English proficiency in class

Proficiency of the English language is divided into oral, written knowledge and comprehension. The opinions of the lecturers generally indicate that there are very different levels of English within the same group with regard to students' oral expression in English. Students from South Asia are more difficult to understand because of the accent, but their language skills are better in general. Students from Central Asia still have poor language skills. 7 out of 7 lecturers agreed that it is difficult for students to express themselves orally, when students have not prepared, have not read, and have not learnt. Students experience great difficulty speaking in complete sentences rather than just phrases. It is often necessary to address students verbally in order to develop a discussion. 7 out of 7 lecturers agreed that knowledge is the main factor regarding whether students will make an effort to express themselves or not. It is more difficult for many students to express themselves in writing than in speaking. Students will use the copy-paste function at the first opportunity, regardless of the region they belong to, because it is easier and students have this unchangeable belief that in this way the text will be understandable, correct and mistake-free (7 out of 7 lecturers agreed). The lecturers indicate that a great deal of explanatory work is invested so that the students are aware that neither grammar nor sentence construction will be evaluated, but answers to their own words are expected. Discussing comprehension, lecturers indicate that students from South Asia fall into two groups – those who are not shy to speak because of their accent or lack of English, and those who speak, but not always on topic. 4 lecturers point out that the fast speaking of Indian students is difficult for the lecturer to understand, but it is possible to get used to it over the years. 5 lecturers emphasise there are often situations when the student even gives an answer 3 times, but it is still difficult to understand the student's thoughts, and then both parties remain in an awkward situation. It is true that students sit next to each other and help translate. 3 lecturers state that students also come along to consultations and support each other. All 7 lecturers stress that most often, students do not understand the lecturers when there is a defence of study/practice papers, which contain specific knowledge of terminology. The student does not know the term due to a lack of knowledge, and not because of the English language as such.

The results of university representatives regarding English at admission and during studies

All 10 representatives agree that all students must successfully pass the admission requirements when applying for studies, including the English language test, so that students are admitted with a sufficient knowledge of English to study

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successfully. Students must have B2 level in English. An international English language certificate alone is not considered. An oral virtual interview in English is held with each student in the case of most education institutions. Even if the certificate has a high level, but practically no knowledge is shown at the oral virtual interview, then the student is not admitted (with particular emphasis on the quality aspect – 5 out of 10 representatives point out). In addition to the general English language test, the admission also require a comprehension test about global processes in the world in English, which is a good way of demonstrating the student's judgement and English language skills. This depends on which country the student comes from. There are countries such as India where the English language is at a high level, but unfortunately there are many strong accents and dialects, which affects the result. 10 out of 10 representatives point out that the lecturers get used to the accent of the students through experience and the students get used to the accent of the lecturers. Only 4 representatives out of 10 state that the lecturers and the administration regularly have English language courses. It is more difficult with guest lecturers, because they change more often. For the first couple of months at the beginning of the semester, it is more difficult for students while they get used to the lecturers' accent, new system and English in general, but despite this, students adapt quickly. And this is why 10 out of 10 representatives agreed that globally, English is not a factor affecting the learning outcomes.

Results of English training of students' countries of origin in general education

In India, primary education is compulsory from class 1–8. It is available in public schools for free and in private schools for a fee. In private educational institutions, lessons are immediately conducted in English, which provides students with early English language skills. In public schools, English is taught as one of the subjects. When students from India enter higher education in Latvia, the lecturers have to face the fact that the students have different accents and dialects, and depending on the school where the students studied basic education, public or private, English language skills also vary. The lecturers complain that they do not understand the students, and it is not easy for the English lecturer to understand the English language of students from India. Students complain that they also do not understand what the lecturer says, as they also have a different English accent. In Sri Lanka International (private) schools, all subjects are taught through the medium of English. English is one of the core subjects included in the Ordinary Level Examination and Advanced Level Examination, in which a student would not receive entry to university without at least an S (satisfactory) Pass for English. In State schools, English is taught orally from grade one onwards. Nevertheless, it is obvious that the English knowledge of students who study at state schools is considerably less than the students who

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go to international schools. There are also different clubs and associations in both schools such as the English Literary Association as well as zonal, provincial and state level English language competitions organised under categories such as creative writing, copywriting, impromptu speaking, drama etc. Students in Latvia usually do not have problems in English. The English language is taught in Uzbekistan, but the emphasis is on grammar and not on the oral part, so the English language training is inferior. Similar results were expressed by Sawir (2005), in that when students come to Latvia, they don't understand what the teachers are saying and requesting, and the students cannot fulfil the request or answer. It creates great problems expressing oneself orally in the classroom, asking questions to teachers, and presenting presentations. There was a big barrier and feeling of shame trying to express myself – recalls one student. When asked if the English accent has been an obstacle, the student replies that in the beginning there were so many problems with the English language that teachers were not understood regardless of whether they spoke with or without an accent.

Discussion

Knowledge of the content of the course is the main factor regarding whether students make an effort to express themselves or not. Even if the student knows the answer but is not strong in English, it has been observed that students try to show that they know the answer in various ways, for example asking other classmates for words. It is one thing to talk about everyday subjects, which students will certainly understand in different contexts, talking about terms and content in study courses, where there are difficulties understanding, even with perfect English pronunciation, is more problematic.

Lecturers' thoughts are divided; it is disturbing when students help the next student with translations during the lecture. They also come along to consultations and support each other, although some lecturers do not support this practice. Students have to be independent. Other lecturers agree and admit that they invite students to help each other with English, without condemning it. The lecturers also point out cases when they themselves ask for help with words that have suddenly been forgotten, and this is how mutual cooperation and understanding is formed, rather than condemning someone for having worse or better English skills.

The lecturers admit that perhaps the lecturers themselves speak too fast and some students have also even reprimanded the lecturers. The lecturers state that they themselves do not feel their accent in English. There were many complaints from students in the very beginning about the lecturers' ability to speak English, when foreign students started studying full time in Latvia, but now there are almost no such complaints. In order for students to better understand what

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the lecturer said, it is preferable to duplicate the information on slides in the presentation.

Students state that the English language tests at admission are too standard-ised and overly lenient. Students usually already know what the questions will be. Agents are already preparing students for what the requirements will be and what questions the educational institution will ask for the English language test.

During the interviews with representatives of higher education institutions, it was pointed out that there are other more important factors that affect the results of studies. For example, learning approach, ability to study independently, time management, methodology used by students, self-control and self-motiva-tion. Previous learning experience and the use of different learning approaches is important. In future studies, more emphasis should be placed on study methods as an influencing factor. University representatives emphasised that foreign students often delay the start of the semester, which is affected by obtaining a visa in the student's home country and which can lead to affecting learning outcomes. This aspect should be raised for further research.

Conclusions

- The aim was to determine whether knowledge of the English language affects the learning outcomes among foreign students. Lecturers and representatives of higher education institutions indicate that English is not the determining factor, but knowledge and understanding of the topic and content is the deter-mining factor for the learning outcomes, while nationals agree that English is the determining factor affecting learning outcomes.

- The use of English by foreign students in class differs by country of origin. Students from South Asia are more difficult to understand because of the accent, but their language skills are better in general, while students from Central Asia still have poor language skills.

- If the knowledge of the study content (terminology) is understandable then there are no problems for the student expressing themselves in English.

- The use of English by foreign students differs by the school (public or private) where they have studied general education before. Students who studied in private schools have a much better command of English than students who studied in public schools. Learning English in general education in the student's country of origin affects the learning outcomes.

- English language tests at admission are too standardised and overly lenient. English admission control should be made stricter in every higher education institution. The unfair practice of commercial agents preparing students for English language tests must be eradicated.

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- Academic and administrative staff should be more sensitive to the language difficulties faced by foreign students. International offices in higher education institutions should educate and provide information (especially new lecturers and guest lecturers) about the needs of foreign students regarding the English language.

- Since English is not the native language of the lecturers in Latvia, the lecturers are therefore more sensitive and understanding towards the students' accent and language skills.

- There is too much reliance on experience (the lecturers get used to the accent of the students through experience and the students get used to the accent of the lecturers). There is a lack of methodical, systematic English language training for academic staff. New lecturers and guest lecturers suffer due to this.

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Ideo Workbook in English Lessons:
A Fit Analysis to Skola2030 Transversal Skills

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ABSTRACT

The concept of transversal skills is a crucial element in competency-based approach in Latvia, which is specified in project Skola2030 and gradually has been approbated since 2017 in schools in Latvia. Teachers were provided with the methodological tools to practise these skills successfully, however, there are still struggles in this field. The objective of the research was to demonstrate the evidence regarding whether the principles of IDEO workbook are appropriate ('fits') Latvian educational context, particularly, the notion of Skola2030 transversal skills. Based on fit and feasibility theory this work addressed the research question: 'How does the design of IDEO workbook's skill set fit to the transversal skills of Skola2030 methodological tool in English lessons?' The examination used statistical descriptive frequency analysis of the transversal skills of each document and comparative analysis between the two document sets included in each of them, using Excel software. The results show that the Skola2030 methodological tool for teachers on transversal skills in language areas stresses critical thinking, collaboration, and digital skills, whereas IDEO workbook underlines critical thinking, creativity and entrepreneurship, and self-directed learning. The high fit of both documents suggests that the adaptation of the IDEO workbook in the schools of Latvia could considerably enrich the Skola2030 educational offer. Suggestions for the improvement of the IDEO workbook and its adaptation are put forward.

Keywords: English as a Foreign Language, fit and feasibility analysis, Hexagon tool, IDEO workbook, Skola2030, transversal skills

Introduction

Significant changes in Europe and worldwide have fuelled the understanding of the value of continuous learning and enhanced the need for all persons to build talents, competences, and inclinations that go beyond core skills over the

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past several decades. These shifts have also influenced existing notions and techniques for developing transversal skills. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), transversal skills are often not explicitly tied to a specific task, job, academic discipline, or specific subject and may be applied in a broad range of contexts and workplaces (Skills and Education Group, 2019). These abilities are 'transferable' since they are not limited to a single industry or professional role. Like a transversal line in geometry, the term 'transversal' refers to how specific talents 'cut across' diverse tasks and jobs. They are analytical and innovative thinking, active learning, complex problem solving, leadership and social influence, technology use, monitoring and control etc. (World Economic Forum, 2020, 36; Álvarez, 2020). Teachers who possess the skills mentioned above can adapt to various work settings and situations. However, the challenge comes when they are not well-versed in English, which is a globally used language for instruction (Zeide, 2022). IDEO workbook is an appropriate methodology to get such teachers on board with language acquisition due to its discovery, interpretation, ideation, experimentation, and evolution approaches with the help of a design thinking approach, which involves recurrences to improve the solutions and increase knowledge (Schallmo et al., 2018).

To begin with, IDEO is design thinking that is experimental in nature. Therefore, it permits teachers to develop new ideas, obtain feedback on them, and then iterate (Lūka, 2014). Design Thinking allows teachers to fail and learn from their failures. Given the breadth of the instructors' needs, their English acquisition will never be completed or "solved" on time (Henriksen et al., 2020). Riverdale (n.d.). states that it will always be in the works. Riverdale Country School located in New York City, and the design firm IDEO collaborated to establish Design Thinking for Educators (DTE). As the name implies, it provides a teamwork approach to developing thinking aimed at teachers looking for design solutions. DTE's toolset and workbook are its highlights since they provide a step-by-step way to get design solutions. The fact that this material is entirely free to download from IDEO's website adds to its appeal, making it an open call for teachers with a focus on English acquisition gain from it.

This research analyses one of the recent contributions to the improvement of the implementation of transversal skills in Latvian schools. Since 2016 Latvia is gradually moving to competency-based education, in which transversal skills promote knowledge acquisition in various contexts with different ways of thinking and self-directed learning, thus boosting the connection of new knowledge with a student's personal experience. Moreover, the use of transversal skills in different learning areas strengthens students' abilities to use them independently and in a wide variety of situations, including complex and unpredictable ones (Skola2030, 2019).

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The methodological tool for teachers to enhance students' transversal skills includes specific skills according to the learning areas, such as critical thinking and problem solving, creativity and entrepreneurship, self-directed learning, cooperation, civil participation, digital skills. As for the language area, where foreign languages are included as well, the main three transversal skills that are highlighted to be taught more meaningfully and successfully are critical thinking and problem solving, cooperation, and digital skills (Skola2030, n.d.). Nonetheless, according to the curricula of English as a foreign language in Forms 1 to 12, approved by National Centre for Education Republic of Latvia (Valsts izglītības satura centrs), all existing transversal skills in Skola2030 and outcomes of a successful acquisition of them is mentioned and described (VISC, 2020). In UNESCO document on assessing transversal competencies (Care et al., 2019, 2) a divergent set of transversal skills is mentioned; however, the main domains are global citizenship, critical and innovative thinking, physical health and religious values, intrapersonal skills, interpersonal skills, media and information literacy, which have got the relevance both to the list of transversal skills in Skola2030 and IDEO workbook (see Table 1).

In the Skola2030 methodological tool, in the chapter of each transversal skill, specific recommendations are described on how to develop students' transversal skills, using all three teacher actions, such as: shape in their own actions the skills and attitudes that students learn, create an environment and offer tasks that promote skill practice, guide the development of skills and support students in the learning process. It is also crucial to point out that the methodological tool provides advice on enhancing critical thinking, cooperation, and digital skills especially in the language area (Skola2030, n.d.). Critical thinking in students is formed when students analyse and evaluate various types of information and situations, study problem situations related to language learning or the language system itself and offer simple or complex solutions, determine the open and hidden intention of the author of the text, justify the opinion and formulate the argumentation.

Table 1. Main Transversal Skills in the Skola2030 Curricula in English Lessons and IDEO Workbook

Skola2030 Curricula in Forms 1 to 12[a]	critical thinking and problem solving (4[b]), creativity and entrepreneurship (3), self-directed learning (5), cooperation (3), civil participation (4), digital skills (4)
IDEO Workbook	teamwork and collaboration, creativity, digital literacy, application skills, empathy, reflective thinking, communication skills, self-discipline

Note. [a] The curriculum 'English as a First Foreign Language' for Forms 1 to 9 was chosen for the analysis, whereas for Forms 10 to 11 it was 'Foreign Language I (English, B2 level)', and 'Foreign Language II (English, C1 level)' for Form 12 were analysed. [b] The numbers describe additional notes on variations of possible outcomes of the enhanced transversal skills.

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Whereas cooperation is developed by offering topics and tasks that encourage students to think about communication as a basis for successful cooperation, and by providing it. According to the communication situation, students express their thoughts, feelings, and opinions orally and in written form to learn and provide information, express emotions and build relationships, as well as listen to others and solve language-related problems together in a group. The digital skills in students are strengthened in diverse learning activities, using digital technologies in a safe and ergonomic way, and critically analysing the content found on the web, including the content of social networks, as well as creating their own original content. The teachers should promote the process rather than just educate so that there is learning by the students with the added outcome of garnering and nourishing experiences about students' own learning (Skola2030, n.d.; Pande & Bharathi, 2020).

The objective of this research was to provide evidence regarding whether the IDEO workbook is appropriate ('fits') to the Latvian context, in reference to the Skola2030 curricula in English lessons. This curriculum research would also be useful to improve the lesson plans for further implementation in English acquisition. The research question guiding the enquiry was: 'How does the design of IDEO workbook's skill set fit to the transversal skills of Skola2030 methodological tool in English lessons?'. The methods for answering this question included content analysis, both thematic and quantitative, focussing on the similarities and differences of the sets of transversal skills that are present in Skola2030 curricula and IDEO workbook.

Methodology

The documental base of the research included the whole IDEO workbook and Skola2030 methodological tool for teaching transversal skills through all learning areas. The IDEO workbook included six activity plans described in the following sections: definition of a challenge, discovery, interpretation, ideation, experimentation, evolution. The Skola2030 methodological tool for teachers on transversal skills' enhancement proposed description and activity plans for the following transversal skills: critical thinking and problem solving, creativity and entrepreneurship, self-directed learning, cooperation, civil participation, digital skills. Both documents included 129 pages, that consisted of the main idea and objective of the document and advised activities that can be used by educators. The UNESCO document on assessment of transversal competencies was also taken into account (Care et al., 2019).

Data collection and analysis covers the DTE document's concept of the five main components, such as discovery, interpretation, ideation, experimentation, evolution is divided into the similar sections throughout the whole IDEO

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workbook. In the beginning of each of the unit and afterwards the whole idea of the activities was provided with the precise description, that helped to conduct the analysis of the practised transversal skills. Regarding Skola2030 the main accent was put both on the set of transversal skills, and to the concept of aims and objectives especially in secondary education, since the level of the use of IDEO workbook requires students' English proficiency at least on level B1, which is the introductory level in Form 10.

The qualitative content analysis was carried out in two stages: first, descriptive analysis of the transversal skills of each project was performed using Excel software. A comparative analysis between the two document sets was implemented by using the Hexagon Discussion and Analysis Tool (Metz & Louison, 2019), revealing similarities and differences between IDEO workbook and Skola2030 methodological tool.

Results

The descriptive analysis is presented by analysing the set of transversal skills (see Table 2). In the Skola2030 methodological tool transversal skills match UNESCO almost all domains except the physical skills and religious values. The same happens with the transversal skills practised in IDEO workbook, moreover, the global citizenship skills are not present as well. However, there is a presence of other skills practised in the IDEO workbook. For instance, every aspect of the workbook goes with a control question. In the beginning of a 'discovery' phase, students have got a challenge and should find the ways to approach it.

Table 2. Transversal Skills Retrieved in the Skola2030 and the IDEO Workbook

Transversal skills category (UNESCO)	Skola2030 Methodological Tool	IDEO Workbook
Global citizenship	civil participation	
Critical, innovative thinking	creativity and entrepreneurship; critical thinking and problem solving	creativity, application skills, reflective thinking,
Physical skills, religious values		
Intrapersonal skills	self-directed learning	self-discipline
Interpersonal skills	cooperation	teamwork and collaboration, communication skills, empathy
Media and information	digital skills	digital literacy

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Digital literacy is practised the most since students have the chance to explore existing ideas across the internet. In the 'interpretation' students have already learnt something, thus they must interpret it by using communication skills and creativity, especially through the brainstorming process. Self-discipline and application skills are required the most since opportunities are provided in the 'ideation' phase; at this point students are welcomed to comprehend what they will create next. Teamwork and collaboration are performed the most during the 'experimentation' students try to build new ideas around the existing ones. Reflective thinking and empathy is required in the last phase of 'evolution'. Students already have experienced their projects, at this point they have a chance for the future to evolve.

The comparative analysis was carried out by applying the Hexagon tool, which was used as a planning tool to evaluate two document sets and practices for use. It is commonly used during the exploration stage, when there is a necessity to identify possible new programmes or practices to implement in the future (Metz & Louison, 2019). This exploration tool consists of two main concepts: implementing site indicators and programme indicators. The questions that were put forward for the discussion were aligned to each of the concepts and their criteria and analysed among the authors of the research (see Table 3).

Table 3. Hexagon Tool Implementation in the Skola2030 and the IDEO Workbook (Metz & Louison, 2019)

Indicators	Criteria	Question	Skola2030 Method-ological Tool	IDEO Workbook
Implement-ing site	capacity	Does the programme require new technology/tools?	2	2
	fit	What other initiatives currently being implemented will intersect with the programme?	3	3
	need	Was an analysis of data conducted to identify specific area(s) of need relevant to the programme?	5	4
Programme	evidence	Is there a well-developed theory that demonstrates how the programme is expected to contribute to outcomes?	4	4
	usability	Has the programme been adapted culturally and linguistically?	5	5
	supports	Is coaching/guidance available for this programme or practice?	5	5
		Total:	24	23

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Afterwards the evaluation was applied in the following formula: 5 for high evidence 4 for evidence; 3 for some evidence; 2 for minimal evidence, and 1 for no evidence.

The question regarding the capacity of the implementing site indicator 'Does the programme require new technology/tools?' brings two points for both Skola2030 methodological tool and IDEO workbook since both are guided by a well-developed theory, including clear criteria for achieving specific skills, however, they do not demonstrate effectiveness of any other technologies or tools through a research study presented in the document. As for the question 'What other initiatives currently being implemented will intersect with the programme?' For the fit of the implementing site indicator both documents receive 3 points because practice shows some evidence of effectiveness through examples and comments from the educators, who have carried out similar activities presented in the document. The last question of the need of the implementing site indicator 'Was an analysis of data conducted to identify specific area(s) of need relevant to the programme?' Skola2030 methodological tool receives 5 points since the introduction of the document includes the theoretical basis because the need in the curriculum is required and the tool has demonstrated sustained effects at least one year of application. Even though the IDEO workbook exists for several years, it mostly stresses the presentation of the innovative approach of design thinking and creative confidence, as well as that, the DTE is continuation of the company's IDEO hard work, thus 4 points are accessed.

The programme indicator continued with the criteria of the 'evidence' with the question 'Is there a well-developed theory that demonstrates how the programme is expected to contribute to outcomes?'. Both tools receive 4 points since the theoretical and scientific basis is present. According to transversal skills in Skola2030, the main aspect was taken from the global documents and sustainable development goals, whereas DTE is based on the research of creative confidence and design thinking as a tool for its enhancement. In the category of 'usability' both programmes receive the highest points for the question 'Has the programme been adapted culturally and linguistically?'. The tools present data from the experience of others, moreover, the experience has been transformed into the tasks that are provided in both documents. Lastly, for the category of 'supports' by the question 'Is coaching/guidance available for this programme or practice?' the maximum number of points is provided as well, because both materials present a great amount of pages devoted to help educators to use the provided activities in practice.

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Discussion

Ideation is the process of producing many ideas. Brainstorming allows you to think freely and without limitations (IDEO, n.d.). Outlandish concepts frequently spark visionary ideas. A brainstorming session can generate hundreds of new ideas with proper planning and a defined set of guidelines. Teachers can discuss what they have learned, give the meaning of a massive quantity of data, and look for design opportunities during this phase. They will have many ideas, including some that they will keep and others that they will toss out. They will make their ideas real by developing rough prototypes, which they will then share with the people they have gained and receive feedback on. They will continue to iterate, refine, and construct until they are satisfied with their solution. This stage might help students answer problems like, "How do I make good sense of everything I've learned?" How do I convert my newfound knowledge into a design opportunity? What's the best way to make a prototype? And how can I know whether my concept is viable? Sketching, modelling, and building can be incorporated into this phase to uncover various new ideas (IDEO, 2013). Innovations are considered as a necessary and positive aspect of changes (Andersone, 2020), thus design thinking activities and experiential learning should be integrated into the lessons (Stock et al., 2018).

The concept of evolution is the progression of ideas over time. It entails determining the following steps, expressing your opinion to those who can assist you, and recording the process. Change takes place over time, and it's crucial to keep track of even the most minor signals of improvement. The workbook is also human-centred, which means it is uniquely positioned to arrive at desirable, practical, and viable solutions. Teachers can quickly identify what is far more desirable by commencing with humans, their hopes, anxieties, and wants. However, this is merely one lens through which they view their answers. Next, they can focus on what is technically possible to implement and how to render the solution financially viable once they have identified a range of ideas that might appeal to them. It's a delicate balancing act and one that is essentially necessary for developing solutions, particularly for English learning, that are effective and long-lasting.

Furthermore, teachers can improve their vocabulary by watching the world around them. Seeking inspiration in other contexts will open their minds and assist them in gaining a new perspective on learning. There is also a need to raise foreign language teachers' awareness as to the implementation of particular transversal skills in the classroom (Baran-Łucarz & Klimas, 2020; Cleminson & Cowie, 2021). They need to try new things by getting out of their comfort zone. Learning from people's interviews, group interviews, and observing their colleagues' conversations are just a few ways they might learn from English language users. Each gathering of information requires a particular setup to ensure the optimal discovery

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experience and people's comfort and readiness to participate. Spending time with others will encourage them to engage with and learn from them more profoundly. Afterwards, stories become meaningful insights through interpretation (Boris, 2017). Observations, field trips, or even a simple chat can be sources of inspiration but extracting meaning from them and translating them into design opportunities is not always straightforward. It entails presenting stories and organising and condensing ideas until you have developed a clear point of view and ideation path.

Limitations of the study were presented in the English proficiency level which must be obtained by students. Unfortunately, it is challenging for students of level A1 to A2 to use activities from the IDEO workbook on their own. Of course, teachers may adapt the activities and simplify the language in the tasks, however, it may be time consuming, thus not appropriate to every educator.

Conclusions

There is an underlying assumption that educators must aim for perfectionism, never make a mistake, and always be excellent role models. It is difficult for them to take risks when under pressure. It restricts the opportunities for more radical reform in English learning. However, educators must be willing to try new things as they can only learn by doing. By putting English into practice through daily communication, the teachers can grow accustomed to the language, accept corrections, and advance with time.

The basis of the idea is built on discovery. Developing an effective solution for instructors begins with a thorough grasp of their requirements. When they are open to new possibilities and remain encouraged to create fresh ideas, teachers can discover what they need for English acquisition. It will provide insight and provide teachers with explicit knowledge of the design issue if adequately prepared. Creativity and fresh insights can also be found in various locations with a curious mentality and without too much preparation, and they can help them master English more quickly.

To sum up, the IDEO workbook is an appropriate methodology tool. It necessitates the acquisition of English by complementing some of the transversal skills such as innovative and critical thinking. Both transversal competencies and the IDEO workbook complement each other as they aim to create an all-around individual. The Skola2030 methodological tool for teachers on transversal skills in language areas stresses critical thinking, collaboration, and digital skills, whereas IDEO workbook underlines critical thinking, creativity and entrepreneurship, and self-directed learning. The high fit of both documents suggests that the adaptation of the IDEO workbook in the schools of Latvia could considerably enrich the Skola2030 educational offer. Suggestions for the improvement of the IDEO workbook and its adaptation are put forward.

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Why Do Students of English Cheat Online and How Do They Do It?

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ABSTRACT

The global pandemic that started in 2020 brought a variety of challenges in many spheres of life. Higher education was not an exception, as all classes were moved to online environments. One of the main challenges became the one of academic integrity, since students' knowledge and skills were tested online as well. This paper will discuss a case study carried out at Vytautas Magnus University (Lithuania) in 2021 that involved Lithuanian students of English as a Foreign Language (EFL) who filled in an anonymous questionnaire with open ended and closed ended questions. The study aimed to find out if the students had cheated in any form of EFL assessment (tests, midterm tests, examinations, etc.) online during the pandemic. They were also asked to indicate the ways in which they had cheated and explain why they had behaved this way. The results showed that eighty percent of all the students had engaged in "digital cheating" in one way or another but provided a variety of reasons to justify such a dishonest behaviour. For example, they wanted to obtain good grades, check the spelling of some words online or translate unknown words (which they should have learned). However, not all students perceived such a behaviour as dishonest. They indicated that what they had done could not be seen as a "big crime."

Keywords: academic integrity, distance learning, English as a Foreign Language, higher education, online learning

Introduction

Academic dishonesty has always been a topical issue (Michael and Williams, 2013) not only at school but also at university level. It is an issue probably almost impossible to eradicate completely. However, due to the spread of COVID-19, a shift of university classes to distance learning environments has

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brought even more challenges than before. In order to fight those challenges, in spring 2020, foreign language and other teachers at Vytautas Magnus University (VMU) were given recommendations that could help to ensure academic integrity while assessing students' skills in the virtual (online) study environment during the pandemic. Some of the most popular and effective means were the following: computer cameras used by students during assessment; restricted possibility to return to previous tasks during all written tests or other assignments; a time limit to do certain tasks (e.g. examinations), which was hoped would not leave time to consult other sources; 3–4 versions of the same task so that the computer system would assign a different task to students randomly and even mix the task order – in case students get the same task, they would not see it at the same time. It does not mean that students did not cheat then, as their teachers still did not see the screen view of their students, so the teachers could not be sure if the students had opened something else rather than, for example, a test on Moodle. Later, in the beginning of 2021, these and other rules were included into the Order for Distance Language Learning compiled by teachers of the Institute of Foreign Languages at VMU. So students studying foreign languages had to stick to the rules in the spring semester of 2021 and later, since the pandemic continued and foreign language classes were held online even in the spring semester of 2022. Nevertheless, it would be interesting to learn about student behaviour related to academic integrity a year before this order. Therefore, a small-scale study was carried out with an aim to find out whether Lithuanian VMU EFL (English as a Foreign Language) students cheated (that is, engaged in academically dishonest behaviour) in any form of assessment (tests, midterm tests, examinations, etc.) online during the pandemic, how and why they did it, since their classes were delivered online, and assessment took place online as well.

Academic Integrity / Honesty and Academic Dishonesty / Cheating

So what is academic integrity, which is also referred to as academic integrity/ honesty, and academic dishonesty/ cheating, as both terms will be used further in this article? According to Imani and Johnson (2018), there is no single definition of these phenomena. In fact, "literature defines academic dishonesty but identifies academic integrity as avoidance of academic dishonesty" (Imani & Johnson, 2018, p. 1365). Having reviewed various sources on the topic, it is possible to claim that different definitions provided by researchers focus on either particular values that academic integrity includes or behaviour that academic dishonesty involves. For example, Benson et al. (2019) provide the following definition:

> *Academic integrity is understood as the commitment to six fundamental values: honesty, trust, fairness, respect, responsibility, and courage. In this vein,*

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> *academic misconduct constitutes a participation in acts by which a person gains*
> *or attempts to gain an unfair academic advantage.* (p. 2)

The first part of this definition focuses on the values that describe academically honest behaviour, while the second part of it is related to actions which are seen as dishonest behaviour. Such behaviour includes issues from plagiarism to cheating on tests and examinations to submitting a work written by somebody else as their own (Imani and Johnson, 2018), which shows a great variety of activities which can be seen as academically dishonest, so cheating can be seen as "a complex system" (Rarisi, 2013, p. 183) of certain behaviour. To be more precise, it "can be more than a single event; it can be a way of perceiving the world" (McKaya et al., 2019, p. 2). One's perception of the world matters because as some research suggest, students do not necessarily see all kinds of academic dishonesty as cheating. The perception may differ depending on one's culture, country, or individual understanding (McKaya et al., 2019) of what is considered as a good/ acceptable or bad/unacceptable behaviour. McKaya et al. point out that "[c]heating is experienced differentially across cultures with some evidence of culturally specific factors such as a higher level of cheating in collectivist countries although the evidence is not entirely conclusive" (2019, p. 4). There is a variety of other reasons why students engage in dishonest behaviour. Some of these are a "lack of responsibility, laziness, lack of respect for academic rules and being apathetic" (Mamoun Saleh & Meccawy, 2021). In addition, sometimes cheating may be seen as a way of socialisation similar to the one on social networks, thus this behaviour is perceived as a way to support each other rather than dishonest behaviour (Mamoun Saleh & Meccawy, 2021, p. 31). The present study involves only Lithuanian university students, but the number of participants is rather limited and the results could not be generalisable and applicable to all Lithuanian students and their dishonest behaviour in online EFL classes.

Moreover, student perception of what is possible may vary depending on where dishonest behaviour is exhibited. According to Langa (2013),

> *Students seem to find it more acceptable for them to personally cheat when*
> *using IT than when not using IT. However, students do not perceive that same*
> *difference for others. They seem to regard cheating for others the same with or*
> *without the use of IT.* (p. 427)

In other words, when students engage in dishonest behaviour, they do not necessarily see it as cheating if they use technologies, so they would tend to cheat online more rather than in a physical classroom. Furthermore, when other students cheat with the help of or without technologies, it is considered as dishonest behaviour, even though the students would not necessarily see the same behaviour as cheating if they engaged in it themselves. In fact, Azulay

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Chertok et al. note that technologies help to cheat because "new modes of academic dishonesty" have become possible and thus evolved, but again it is important to note that there is no clear definition of what actually constitutes online cheating as such (2014, p. 1324). Similarly, Imani and Johnson (2018) agree that the use of technologies not only have improved teaching and learning but also have brought academic integrity-related challenges, one of which is an increased "risk to academic integrity" (Azulay Chertok et al., 2014, p. 1324). The Internet makes it easier to access all the available information quickly and use it, while social networks, which students use, create conditions for communication and information sharing and exchange (Azulay Chertok et al., 2014, p. 1328).

On the one hand, it is thought that students do not have much time for that during assessment online, but Azulay Chertok et al. argue that "multi-tasking is an expectation in the digitally oriented reality" (2014, p. 1328). Most of our students nowaways are digital natives who can do quite many things that involve technologies at the same time. According to Peterson,

> [c]heating has gone beyond just copying papers or answers. Students can now (…) send each other answers through phones and other devices – one student can share answers with another via digital media and suddenly half the class has the same answers. (Peterson, 2019, p. 25)

This is why Rarisi refers to such behaviour as "digital cheating" (2013, p. 179). In fact, Hayes et al. emphasise that "[t]here are literally hundreds of ways students can cheat" (2006) online (and offline). Therefore, the ways of cheating depend on student imagination and become more and more sophisti-cated (Hayes et al., 2006, p. 4), since "temptation for cheating is always around" (Naghdipour & Emeagwali, 2013, p. 265). What is also important is that, as Michael and Williams point out, the

> online environment, by its nature, may make it more difficult to prevent [cheating] or catch students who are involved in working together when they are not supposed to be. (Michael & Williams, 2013, n.p)

In the context of VMU, it may be less likely that students worked together on tasks during the pandemic, because they did not know each other well and were from different study programmes, so they met only in their EFL classes online. Yet, it is known that EFL students do create Facebook groups and sometimes communicate there (even when their classes are held in physical classrooms), thus cooperation may happen even though the students are almost strangers to one another and have not met in the real world. However, Peterson claims that the belief that academic dishonesty online is more widespread than in physical classrooms is not true because a *"number of studies have been completed in this area*

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and, in fact, many have shown that students are more likely to cheat in on-campus courses than in online courses" (Peterson, 2019, p. 24, italics in original). Yet, it was not possible to find any of such studies while doing literature review for the present paper.

Quite many researchers studying academic dishonesty also discuss the so called Fraud Triangle that comes from business studies and is used to discuss fraudulent employee behaviour (Rarisi, 2013). According to Hayes et al.,

> [a]lthough the fraud triangle is used most often to discuss financial fraud, a closer look at research on why students cheat indicates that student cheating behavior falls within the elements of the fraud triangle. (2006, p. 2)

As Little and Handel (2016) note, the so-called Fraud Triangle was developed by W. Steve Albrecht and later improved by Donald R. Cressey and Edwin Suterland; it formed out of the following three components: pressure, opportunity, and rationalisation. The triangle is explained in terms of employee behaviour that describes how an employee commits fraud, but it could easily be applied while describing student dishonest behaviour in any physical or online classroom. A student may feel pressure to perform well on a test or other assignment and thus is motivated to behave unethically. Distance or online learning provides an opportunity to engage in unethical activities, such as using the Internet and consulting different resources in order to find answers, but the rationale behind such a behaviour or justification of it is that everybody does it in distance or online learning, noone sees it or maybe that it is not a "big thing". A cheater may not even see this as cheating (Hayes et al., 2006). Little and Handel (2016) suggest a possible solution to the problem of academic cheating which involves three elements: leadership (involving codes of conduct, policies, etc. and education on ethical behaviour), control (the teachers' role to inform the students about academic integrity, rules, etc. and establish control of academic integrity in assessment) and effective follow-up (reporting of cases of academic dishonesty and making sure that the actions that are indicated in institutional, e.g. university, documents are taken). One more solution is to reduce one of the components (pressure, opportunity or rationalisation) of the Fraud Triangle, because in such a case the amount of cheating can be also reduced or eliminated (Hayes et al., 2006).

As far as other solutions are concerned, Michael and Williams point out that "an online testing environment requires different strategies and tactics from what we have had to consider in the past" (2013, n.p). On the other hand, these scholars suggest that based on their study, there will always be some cheating students no matter the effort and hard work of educational institutions (Michael & Williams, 2013). Prevention is key and starts with raised or created "awareness of the problem" (Michael & Williams, 2013, n.p), but it is

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impossible to prevent cheating without knowing what and why students do when they cheat (Naghdipour & Emeagwali, 2013), since knowledge may help to "promote ethical responsibility" and foster "a culture of academic integrity" in both academic and institutional communities (Imany & Johnson, 2018, p. 1366). Hayes et al. (2006) suggest including academic integrity-related policies in course syllabi and discussing them during the first class in all study subjects, which could be an important step in the process of promotion of academic integrity, or reminding about the issue periodically (Krishnamurthi & Rhode, 2018).

What else can be done? There are technological solutions and ways of prevention. For example, there are remote proctor systems, including microphones and cameras, which monitor what happens during assessment in the student's environment (Michael & Williams, 2013). There are also applications that prevent students from opening other webpages during online testing. Moreover, it is recommended to update test content constantly so that the tasks differ in different groups of the same class in the same or different semester, the same or different year.

Methodology

The aim of the study was to find out whether VMU EFL students cheated in any form of assessment during the pandemic in 2020, what kind of behaviour they engaged in and why. 44 students of general English at upper-intermediate level at VMU were asked to fill in an online questionnaire about their academic behaviour during EFL assessment online in 2020, but the study itself was carried out in the beginning of 2021. The students participated on a voluntary basis and were granted full confidentiality. They were also informed that by filling in the questionnaire they would give their consent to participate in the study and for the results to be used for academic and scientific purposes.

39 out of 44 students agreed to reveal their behaviour by participating in the survey. Out of all the participants, 74.4% were female and 25.6% were male students. They were 18 to 22 years old, but the biggest part, 56.4% of them were 19, while 28.2% were 20 years old. All the participants were bachelor's degree students. In fact, most of them were freshmen, as 89.7% of them were year one students, while the rest of the sample – 10.3% – were in year two of their bachelor studies. The students indicated their demographic information in the first part of the survey, while in the second part the respondents were able to choose all the statements (out of thirteen given ones) that applied to their experience and (non)academic behaviour in the online learning of English as a foreign language in 2020 at VMU in terms of academic integrity or dishonesty. Even though the study was both qualitative and quantitative, the biggest attention in

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the study was dedicated to the qualitative part that included respondents' explanations of what exactly they did during their assessment of English and why (the components of the earlier discussed Fraud Triangle – *pressure, opportunity,* and *rationalisation*).

Having received and processed the research data or this small scale case study, the students were presented the results and informed about the academic behaviour that was considered as unacceptable. It was hoped that the students would change it.

Results and Discussion

In the second part of the online questionnaire, the research participants were asked to choose all the statements that applied to their academic experience of being assessed in English online in 2020. The options were the following:

Table 1. Statements on Academic Integrity or Dishonesty

Statement	%
1. I used my notes during tests/exams, etc.	29.2
2. I used my class materials, e.g. handouts, slides, books, etc., during tests/ midterm tests/exams, etc.	13.8
3. I used the Internet (e.g. Google) for information during tests/ midterm tests/ exams, etc.	16.9
4. I asked for help from my family members or relatives during tests/ midterm tests/ exams, etc.	0
5. I asked for help from my friends during tests/ midterm tests/ exams, etc.	7.7
6. I sent print screen pictures to other course peers to learn the answers during tests/ midterm tests/ exams, etc.	3.1
7. I took a test/ midterm test/ exam, etc. later, so I asked other students who had taken it about it, hoping I would get the same one.	0
8. I paid someone to take a test/ midterm test/ exam, etc. instead of me	0
9. I sent my test/ midterm test/ exam, etc. answers in some form (e.g. print screen pictures) to a friend or a course peer in a chat/ email, etc.	1.5
10. I copy-pasted information from an article/ the Internet or some other resource when I prepared my presentation	4.6
11. I submitted a work from my previous class as a new one in a different class (no matter if there were any changes made or not)	1.5
12. I did something that is not mentioned here, but I will indicate and explain it in the box below.	1.5
13. I always relied on my own knowledge and did not engage in any dishonest academic behaviour in my English tests/ midterm tests/ exams, etc.	20

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Later the respondents of the questionnaire were asked to comment on their choices by explaining why they engaged in the particular type(s) of behaviour. As Table 1 shows, approximately 29% of the respondents used their notes during tests, midterm tests and examinations. Thematic analysis was employed in this study in open-ended answers in order to identify most common explanations and reasons of dishonest behaviour. In the case of cheating by using notes, the reasoning was the following:

- The students forgot something and wanted to check.
- The students did not believe in/ trust their knowledge of English.
- The students were stressed.
- They could/ the materials were reachable.
- By using their notes the students could do better in their assessment.
- It helped to understand how to do a task or make sure they were doing a task correctly.
- Doing this is not a big crime.

In other words, the students had low self-esteem or were stressed because they wanted to succeed (*pressure*) and an *opportunity* to feel less stressed presented itself, since the assessment was done online. As a result, many used the *opportunity* to behave dishonestly. The table below shows some answers provided by the research partcipants (their language here and elsewhere in the paper has not been corrected).

Table 2. Students used their notes during their assessment of English

Statement 1
R9. I used my notes during tests/ midterms/ exams, etc. I wrote answers after I finished exam, to check later what mistakes I made and how it should be correctly.
R13. I used my notes not because I wanted to cheat on my test. I did that because I forgot something and looked at my notes. That happened once maybe twice.
R15. I used my notes during test/ midterms/ exams because I did not believe my knowledge.
R18. used my notes because I could in distance learning.
R19. I used my notes because I'm stressed when I have to write an exam, I'm the slow one, so I always run out of time.
R22. I used my notes (...) because I was afraid of the grade I could get. The tests were really important to me.
R28. Yes, using the notes during test/midterm is cheating, however learning shouldn't be like hammering in. Using notes while writing or learning is much more better. (...) University teaching should be based more on using notes plus your general knowledge that you learned during the course or school.
R29. In my personal thinking using notes from the lectures and information from books is not a big crime. It helps me to comprehend how task is required to be done. And also I think, that way I avoid stress.

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As R29. (R. here and elsewhere will stand for "research participant") notes, using notes "is not a big crime." Similarly, R28. points out that university assessment should in fact include open-book type testing where student notes would be used, even if it was a foreign language, such as English, class.

Around 14% of the research participants used class materials such as slides, handouts and others during different types of assessment when they did not understand something or wanted to check their answers before submitting them. Several examples can be found in the table below.

Table 3. Students used their class materials during the assessment of English

Statement 2
R1. I rarely use my notes. Maybe on 1 or 2 questions if I don't understand something. But usually I just guess in that case.
R7. I just used my class materials because I want to check myself and I want to do exam myself.

It seems that students did not use class materials often, but when they did, they wanted to make sure they had correct answers, which was related to the pressure they felt to be correct that later led to a better grade. On the other hand, sometimes looking at the materials served as a means to understand tasks instead of asking for an explanation from the teacher who was proctoring a particular test or some other form of assessment online.

Approximately 17% of the respondents used the Internet connection during their assessment of English. Reasons for this academic dishonesty varied. However, the following three reasons were provided most frequently by the study participants:

- It was useful to check the spelling of English words.
- They needed to check word meanings on Google Translate.
- They wanted to obtain good grades.

In other words, the reasons for cheating were related either to the students' lack of knowledge in terms of written forms or meanings of vocabulary or the *pressure* to succeed by getting good grades. Table 4 provides some examples of the provided open-ended answers.

It can be stated that the use of the Internet, Google in particular, during testing was a way to get some correct answers that would finally lead to a better grade than these students would get if they did all the tasks themselves. In addition, as the testing happened online, the students pointed out that it was easy to access the information available there, so they simply used the *opportunity*. Moreover, sometimes it was quicker to google the answer rather than try to remember what the student had learned. It was also used to fill in the knowledge gap when something had not been learned but should have been.

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Table 4. Students used sources on the Internet during their assessment of English

Statement 3	
R5.	Used internet mostly to double check spelling of the word. We had tests as big as exam before mid-term and final exam to look how the exam will look like and if we're actually prepared for it, in those I've never use any notes or external material.
R8.	Most of the time I was using google translator or I was searching for verbs.
R11.	I know is wrong but it just hard not to search for answers and get better grade, when I can.
R17.	It's very hard not to use information then you have simple access to it. I know that isn't best option to do, but everyone want good grades. In the other hand i don't ask help from other students or friends, because i trust only myself.
R34.	I used the google translate because sometimes it takes time to remember one or another word.
R38.	I used a bit of internet and 1. my own notes (…), not because of not knowing, just in-case.

Some students admitted that cheating was wrong but they did it anyway: e.g. R. 11 "I know it is wrong but it is just hard not to search for answers and get better grade" or R. 28 "Yes, using the notes during test/midterm is cheating, however learning shouldn't be like hammering in" (a literal translation from Lithuanian where it means to learn something by heart). Nevertheless, almost 8% of all questionnaire respondents asked for help from their friends, as probably they would not have been able to do the tasks themselves even if they tried to consult other sources. At other times cheating happened in a way which was not clearly indicated: R2. "I a wanted better mark, so instead of not answering the question I chose to check other information I had."

Nevertheless, it is pertinent to emphasise that academic integrity is important not only in assessment that happens in a test or some other format. For example, in their English classes of different levels at VMU, students usually make presentations, so it was interesting to learn that there were some academic integrity-related issues that probably would have happened even if the classes had been held in a physical classroom, not online, as well, as some students admitted to have plagiarised or self-plagiarised: "I copy-pasted information from an article/ internet when I prepared my presentation because I didn't know the information that I had to use in the presentation and I think I also learned what I used" (R9). One more example on the issue is the following: "My actions are inexcusable and I do not have any good explanation for them. I still study hard for my exams, midterms and tests but my wish to get the best mark I can is stronger than my integrity. The reason I submitted a work from my previous class is because that was the easiest way out and my group and I were already late on that assignment, so we just used my already previously done project and just shortened it to a 5 min presentation" (R3).

This only shows that there is a need to speak about the issue of plagiarism as a component of academic dishonesty not only in a foreign language classroom but

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also at all university classes. Just like in other earlier discussed cases, students plagiarised either because they wished to get a better grade or because they had not put the effort to do something themselves. It is important to point out that since the respondents were able to choose more than one provided statement to describe their behaviour, some students indicated they had engaged in several types of cheating. Yet, 80% of them cheated in at least one way.

The reasons why 20% of the respondents relied only on their own knowledge and did not engage in any dishonest behaviour in their online EFL classes when their skills were assessed were related to student personal values, as they explained that they did not like cheating in general, trusted themselves and their knowledge. Some of the open-ended answers are provided in Table 5 below.

Table 5. Students did not engage in any dishonest behaviour in their assessment of English

Statement 13
R4. I know that cheating not helps to improve your level, I am in university, cause I want to be more clever than other from my village who do not believed to powers about desire to study .
R14. I did not use any information to write my exam or midterm.
R16. I did not use notes or internet because I have enough English knowledge from living abroad.
R20. Because I hate cheating.
R21. I didn't use anything. I did everything on tests by myself.
R26. I do not like to cheat.
R37. I am always honest, so I have nothing to explain. My grades were not very good but I got them for what I really knew.
R39. I trust myself.

As R4. Rightly noted, cheating in EFL assessment does not improve one's level of English, but as the students who had cheated explained, their motivation for cheating was related to better grades rather than actual English skills (for more information about Lithuanian students' intrinsic and extrinsic motivation to study English see Daukšaitė-Kolpakovienė, 2021). As a result, R37 pointed out that s/he relied on the knowledge s/he had gained in the course but this did not result in very good grades. This might lead to a misconception that cheating leads to good grades while being honest does not, since good grades actually depend on one's effort to learn and demonstrated knowledge and skills. Furthermore, students will use English in many contexts outside the online or physical classroom, so by cheating in EFL assessment they actually cheat on their own understanding of the skills they have. Finally, it is good news that in the survey there were students who did not cheat in any way, but on the other hand, the part of such students was rather small.

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Conclusions

Knowledge about the ways students cheat online is useful because their teachers can search for ways to obstruct such behaviour. Most of the ways of cheating in the study could be prevented with the use of more advanced technologies to proctor student assessment. However, such technological advances are quite costly and not all universities can afford them, at least most Lithuanian universities cannot. Thus, there is a need to search for other affordable ways.

Of course, it is important to raise student awareness about the requirements of ethical behaviour whether classes take place in physical classrooms or online, but at the same time, the tasks themselves should be prepared in such a way that open-book exams become possible, as the students would need to apply the knowledge they have, synthesise and compare information rather than include something from their notes or a text book. This may not apply to lower levels of English but would be definitely useful while assessing intermediate and higher levels.

As the study has revealed, the students who cheat are often motivated by their lack of knowledge (related to something they did not learn but should have) or better grades that they hope to obtain. Therefore, it is important to help them understand that grades are meant to show how much of something they already know, what they have not studied enough yet and thus should improve in the future. Consequently, the grades received by cheating do not show anything and do not encourage further improvement or growth in any way. On the other hand, future studies may analyse why grades are so important. Some possible reasons may be related to high expectations of individual students, parental or peer-pressure, possibilities to study free of charge and receive scholarships awarded by the university.

It is important to take into account the fact that the study is limited in the number of its participants. Therefore, it is not possible to generalise its results or claim that most of VMU EFL students cheat online. However, the study sheds light on what sometimes happens in online learning.

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Professional Development Used to Enhance K-5 Teachers' Competencies Working with English Language Learners

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ABSTRACT

Over the past decade, the United States education system has predicted a significant increase in the number of English Language Learners (ELLs) enrolled in public schools. A substantial number of teachers who interact with ELLs lack the preparedness to support their student's academic needs. Research has shown that the lack of professional development (PD) debars teachers from receiving efficacious resources to support English Language Learners. Most professional development (PD) provided for teachers excludes addressing ELL's content. The absence of PD specifically focused on ELLs has left many teachers entering the profession not adequately trained to engage and support ELL students. The types of PD described by teachers tend to give the bare minimum coverage of how to work with ELLs rather than go in-depth on the issues that prohibit ELL students' ability to understand the learning content. The conceptual framework incorporated in this exploratory research will be Thomas Guskey's theory of teacher change to focus on the goals of professional development. This exploratory research will examine PD to further understand which delivery modes are optimal to address a major deficit in knowledge regarding PD training that limits teachers' competencies to understand and support ELLs.

Keywords: competencies, English Language Learners, learning outcomes, professional development, teachers

Introduction

When the 2020 Coronavirus disease (COVID-19) emerged as a pandemic, the U.S. educational system had to implement strict protocol procedures to ensure the safety of all educators and students. The new protocols pivoted many educational institutions to shift the classroom culture from in-person to virtual learning (Chaturvedi et al., 2020). The impact of the pandemic has affected the formality of how students receive instructional learning. For individuals who

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identify as second language learners, the impact has had more negative experiences because several barriers such as lack of online learning resources, internet access, language barriers, and families' limited capacity to fully support their child's online learning shaped their educational experiences (Scheicher, 2020; Umansky, 2021).

Before the pandemic, an increasing number of English Language Learners (ELLs) were enrolled in mainstream classrooms with teachers who had not been formally trained to support ELL students academically (Feiman-Nemser, 2018). Over 3.8 million ELL students were enrolled in schools across the United States, with 16.2% registered in the elementary grade level (National Center for Education Statistics [NCES], 2020). Rapid growth in the ELL student population required educators' attention as the academic success rate of ELL students continued to fall behind the rest of the student population (Batt, 2008; Sugarman & Geary, 2018; Zarrabi, 2016). Teachers encounter a multitude of challenges when selecting a method that is effective for developing English proficiency in the primary grade levels (Ariyanti et al., 2019). A growing number of teachers who interact with ELL students do not have previous experience or lack the preparedness to academically support ELL students in the classroom (Hansen-Thomas et al., 2016).

According to Ariyanti et al. (2019), teachers must identify what strategies particular students process new information. While PD such as graduate courses or after-school workshops may provide teachers with skills by demonstrating teaching strategies that work for linguistic learners (Hansen-Thomas et al., 2016), many teachers still feel unprepared to work with ELLs (Wu & Guerra, 2017). Guskey (2000) states, "We cannot improve schools without improving the skills and abilities of the teachers within them" (p.18). Primary teachers who are not properly prepared to serve ELL students face an increasing struggle to provide adequate instruction to ELLs (Hegde et al., 2018).

Teachers relied upon PD opportunities such as graduate courses or single workshops to demonstrate teaching strategies for today's educational climate, however, these opportunities are currently insufficient to equip teachers with the necessary knowledge to educate ELL students properly (Khong & Saito, 2013). Professional development training can offer teachers ways to improve their self-efficacy and deepen their knowledge about ELL students (Tran, 2014), yet 57% of teachers reported needing additional training to offer sufficient instruction to ELL students (Gomez & Diarrassouba, 2014).

Previous studies conducted before the pandemic show an increasing interest in the professional development processes (Dengerink et al., 2015), however, these studies do not provide sufficient evidence of the effectiveness of professional development as it correlates to ELL learning outcomes. As the pandemic continues into its third year, it has exposed several inequities in our education

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system that have resulted in the heavy loss of instructional learning for K-5 students, particularly second language learners. Given that pre-pandemic, K-5 teachers felt that they barely understood how to meet ELL students' needs, and the pandemic only deepened these pedagogical concerns, given the educational losses of these students, it is important to discern what types of PD would be most efficient to support teachers working with ELLs?

Review of the Literature

Professional Development in Education

Traditional PD activities for teachers typically take the structure of one-size-fits-all. The basic model behind traditional professional development requires teachers to passively receive program "experts" that teach too many types of interventions in one setting (Yurtsever, 2013). However, many teachers find these types of workshops trivial due to the information not correlating with their specific needs. According to Loucks & Horsley et al., (1989), professional development must be a continuous learning process, not an *event*. Thomas Guskey (2002) identifies that "teacher's knowledge of subject content and academic disciplines, the ways students learn, procedures, and classroom management that create an effective learning environment is continuously expanding" (p. 19). Therefore, teachers need continuous learning to adapt and adjust to their task environment. At least some of the PD opportunities need to focus on learning practices based on their current task environment and their knowledge of practices in curriculum instruction.

Researchers have begun to study the quality of practical PD opportunities based on student learning outcomes (Darling-Hammond et al., 2017; Van der Kinkl et al., 2016; Posthom, 2018). One study identified that the critical elements of effective professional development should be:
    a) content focus,
    b) incorporates activity learning,
    c) offers collaboration,
    d) modeling of instruction,
    e) offer coaching support, and
    f) adequate time (Darling-Hammond, 2017).
Research in the U.S.A. found that many PD opportunities do not meet the necessary elements to support teacher practices and student learning outcomes. There is also limited evidence showing specific PD opportunities that highlights ELL contents. In a survey, teachers reported participating in some form of PD that focused on subject content taught (85 percent), whereas teaching ELL students (27 percent) was a minor topic covered (Rotemund et al., 2017). The question that remains unaddressed is how to measure the effectiveness of PD activities on

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ELLs' learning outcomes when there are limitations on the number of opportunities provided to teachers?

Van der Kinkl et al., (2016) findings identified that teachers valued quality PD opportunities that addresses their identities and students' different ambitions and learning needs. According to Guskey (2000),

> *A broader conception of professional development includes opportunities for educators to discuss, think about, try out, and hone new practices in an environment that values inquiry and expectations* (p. 7).

Thus, the ideal design of PD opportunities looks to bring a continuous movement of positive change and improvement that will produce students' opportunity for success. These positive changes and improvements can be found when schools provide opportunities for educators to collaborate with other educators, give performance feedback, and allow teacher observation with experienced teachers (Postholm, 2018). In addition, one study closely examined how PD activities influence school improvement. The finding recognized the value of language through teacher reflections that could be used to enhance PD opportunities based on teacher knowledge (Postholm, 2018).

This study will define professional development as processes and activities to enhance teachers' professional knowledge, skills, and beliefs so they can improve and support individual learning needs (Guskey, 2000). A broader scope of how professional development is defined can be based on these three characteristics; it should be (a) intentional, (b) ongoing, and (c) systemic. When PD activities are intentional it creates a clear purpose and attainable goals for educators. These goals focus on the "result-driven" and can be assessed based on the evidence of students' learning (Sparks, 1996b). Teachers must be continuous learners throughout their careers for PD to be ongoing. As a "one-shot" event, professional development is insufficient to provide meaningful practices (Darling-Hammond, 2010); focusing on sustained durations allows teachers the opportunity to identify the challenges and develop practical solutions (Bates & Morgan, 2018). Darling-Hammond (2010) states,

> *Teachers judge professional development to be most valuable when it provides opportunities to do "hands-on" work that builds their knowledge of academic content and how to teach to their students and when it takes into account the local context* (p. 227).

Professional development as a systemic process can be an approach that recognizes that everyone from the teacher to the organization affects student learning (Guskey, 2000). Thus, PD opportunities must be intentional, ongoing, and systemic, and be aligned to both the organization's and individual's goals to ensure improvement in teacher's competencies and student learning.

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Challenges

One of the growing trends in the education field is addressing the concerns of teachers' inability to cater to culturally and linguistically diverse students. Several researchers identified common challenges that K-12 teachers face working with ELLs, including a lack of academic vocabulary, poor communication with students and parents, lack of time, and shortage of resources to provide culturally responsive instructions to ELLs (Akbari, 2015; Hansen-Thomas et al., 2016; Songbatumis, 2017). According to Hansen-Thomas et al. (2016), teachers feel unprepared and at a loss instead of finding strategies and resources to support and challenge ELL students. Teachers who do not have the proper knowledge of the students' cultural backgrounds with whom they work tend to have a negative attitude or belief about ELL students. Researchers found that teachers' most common issues could be narrowed down to a lack of PD activities and not being prepared well enough in their teacher preparation programs (Khong & Saito, 2014; Songbatumis, 2017).

The data available for PD activities are vague on a national level (Sims & Fletcher-Wood, 2020) and there is limited evidence that has focused on the type of professional development that addresses ELLs content. However, several studies have recognized the effectiveness of PD opportunities for teachers. A recent Teaching and Learning International Survey (TALIS) found that roughly 82% of primary teachers experience a positive impact after PD activities (Sim & Waterfield, 2019). However, when teaching in a multicultural setting, roughly 33% of teachers did not feel confident in their abilities to address the challenges of working with a culturally or linguistically diverse student body (Methlagl, 2022).

Identifying a promising approach to improve teaching quality and students outcomes requires relegation from the "sit & get" content delivery norm. Current PD opportunities are interactive models used to enhance teachers' competencies and skills in subject content, technology, classroom management, and other content areas (Rotemund et al., 2017). However, the COVID-19 pandemic provided limited PD opportunities for teachers to address the online teaching challenges and expectations (Trikoilis & Papanastasiou, 2020), hence the amount of data available is limited.

Conceptual Framework on Professional Development (PD)

Based on Guskey's model of teacher change (2002), the effectiveness of PD programs can assess the change in teachers' classroom practice, student learning outcomes, and teachers' beliefs and attitudes. Figure 1 models what teachers changed, based on a sequence of outcomes related to professional development. There is an assumption that for teachers to show commitment and acceptance for learning new strategies and skills, PDs must first address the teacher's attitude and beliefs.
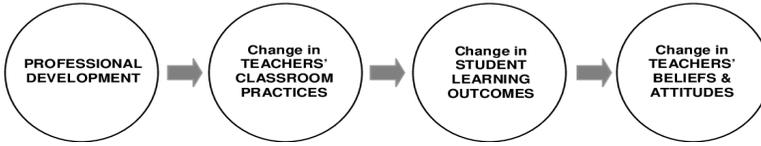
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Figure 1. Guskey's Model of Teacher Change

Guskey (2002) argued, "an alternative approach would result in a significant change in teacher's attitudes and beliefs occur primarily after experiential-based learning" (p. 384). Professional development opportunities that change teachers' attitudes are the result of successful implementation of practices that change the way teachers' perspectives on new instructional strategies. Support for this model was evident through studies from the late eighties, which found that adjusting teachers' attitudes and beliefs before new practices were executed was unsuccessful (Bolster, 1982).

Similar results come from a three-year international study that infused drama courses into classroom teaching through an in-service program. According to Gatt (2009), a 3-year study designed to prepare Malta teachers to use drama education in their classroom had significant changes in teachers' attitudes and beliefs, however, this was only evident after witnessing improvement in student learning. In addition, a 2018 year-long study examined changes in teachers' beliefs about the implementation of inquiry practices to teach science to middle schoolers. This study found that teachers experienced significant gains in personal self-efficacy after practice-teaching sessions and reflection sessions (Lotter et al., 2016).

Guskey's (2002) model of teacher change guides the creation of PD programs because it argued that change in teachers' beliefs and attitudes occurred after student learning improvement (p. 383). Recent research has led experts to believe that professional development activity should consider teachers' diverse learning styles and needs, and enhance their knowledge and experience (Hanover Research, 2017). With eighty-two percent of teachers stating that PD activities had a positive impact on their competency skills, there were still areas of improvement that needed to be addressed, such as the lack of PD opportunities for teaching in multicultural settings and about students with special needs (OCED, 2019). These could be evidence-based PD opportunities provided to teachers within their school districts.

Methodology

The study investigated how professional development enhances teachers' competencies to support ELL students. In this case, the guiding questions for this study:
1. What types of professional development opportunities are optimal for supporting teachers working with ELLs?

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2. How do primary teachers describe the role of professional development opportunities in enhancing teachers' competency?

By concentrating on these questions, this study will highlight the personal preference of teachers using three data collection methods: online questionnaires, semi-structured interviews, and a focus group to ensure validity and triangulate data.

Population and Sample

In Miami-Dade County, approximately 338,000 students were enrolled in the 2020-2021 academic school year. Roughly 57% of the student population's primary home language was non-English, making it the highest population of second language learners in Florida (Miami-Dade County Public School, 2020). According to the NCES (2020), 7,350 teachers worked in the elementary sector. For this study, the target population was primary teachers with a minimum of three years of experience working with ELLs in classrooms. Using purposive sampling, the researcher recruited 18 participants based on specific characteristics that would provide the most reliable information based on experience and knowledge (Etikan et al., 2016).

Table 1.1 provides a population demographic of the teachers' backgrounds in this study.

Table 1. Participant Demographics

Pseudonym	Gender	Age	Degree	Question-naire	Interview	Focus Group
101	Female	20−30	Master's	X	X	
102	Male	50+	Master's	X	X	
103	Female	40−50	Bachelor's	X		
104	Female	20−30	Bachelor's	X		
105	Female	40−50	Master's	X		
106	Female	40−50	Master's	X		
107	Female	20−30	Bachelor's	X		
108	Female	40−50	Doctorate	X		
109	Female	20−30	Bachelor's	X		
110	Female	20−30	Bachelor's	X		
111	Female	20−30	Master's	X	X	
112	Female	30−40	Master's	X		
113	Female	20−30	Master's	X	X	X
114	Female	30−40	Bachelor's	X	X	
115	Male	20−30	Bachelor's	X		
118	Male	30−40	Master's	X	X	X
119	Female	30−40	Bachelor's	X		
120	Female	30−40	Master's	X	X	X

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Instruments

For this study, the researcher used three data collection methods to gather information on teachers' experience and knowledge of PD activities. The first method was an online questionnaire using the Qualtrics platform. Questionnaires collect information based on opinion, knowledge, and behavior (Yaddananpudi & Yaddananpudi, 2019). Questionnaires are an easy tool for surveying diverse perspectives to help fill in the literature gap related to PD and ELLs (Braun et al., 2020). The second method was a semi-structured interview which allowed participants to share their past experiences or reflections on given scenarios (Queirós et al., 2017).

The researcher elicited open-ended questions to allow teachers to share their perceptions on the quality of PD opportunities and how it enhanced their competency in working with ELL students. The final technique was a focus group that allowed participants to discuss PD issues for ELL teachers. Focus groups can be described as a meeting that is organized and has structure while providing open dialogue for the individuals to contribute to each other opinions (Sim & Waterfield, 2019). The researcher asked ten questions to the participants in each of the three methods that aligned with the research questions for this study.

Procedures

This study aimed to understand what types of PD were used to enhance teaching competency for teachers working with ELLs. No data collection occurred until the researcher received approval from the Institutional Board of Review (IRB). An email was sent to multiple social media platforms such as Facebook and LinkedIn and to former colleagues who could provide external connections to teachers in this school district. To be eligible for this study, participants were asked: (a) Do you work with students in your classroom who identify as ELLs? and (b) Have you participated in any PD training within the last three years?

In addition, confidentiality was assured as each participant was assigned a pseudonym. Participants were given a confidentiality agreement which stated they agreed to provide the researcher answers based on their knowledge and experiences. For participants' safety and to manage the safety needs related to the COVID-19 pandemic, questionnaires, interviews, and the focus group were conducted through Zoom.

The data collected from the three instruments were transcribed for thematic analysis. Thematic analysis identifies pattern recognitions through themes in qualitative data (Maguire & Delahunt, 2017; Roberts et al., 2019). The initial data analysis revealed multiple themes which were further analyzed and coded using the NVivo software system. Using Braun et al. (2020) six-step framework that involved:

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a) familiarization,
b) generating initial codes,
c) generate themes,
d) reviewing themes,
e) defining themes, and
f) writing the results.

After coding the data, common themes emerged from the study that addressed the research questions. One limitation which may affect the validity of the findings was that attrition occurred due to participants withdrawing from the study early due to personal obligations or high demands from their job. Additional questions required further investigation on professional development and student learning outcomes.

Results

This section provides a step-by-step report on what types of PD activities were optimal for enhancing teaching competencies based on teachers' perceptions of the types of PDs offered in their school district. Previous studies have shown that teachers often feel unprepared and frustrated when working with second language learners (Feiman-Nemser, 2018; Villages, 2018). The literature review revealed that more research is needed to understand how teachers are prepared to work in today's diverse classroom setting. This study's primary objective was to understand teachers' experiences by incorporating the competencies learned from PD activities. Eighteen participants took part in the online questionnaires, however, most teachers opted out of the study due to personal reasons or job obligations.

Research Question #1

The first research question asked "What types of professional development were optimal for teachers working with ELLs? This question was sectioned into two parts to bring clarity for teachers in the study. The participants shared the number PD received and identified what professional development activities specifically cater to ELL students. The range of PD opportunities provided to teachers was 3 to 15. The number of PD activities provided during the 2020–2021 academic school year was contingent upon the teacher's interest. In Miami-Dade County, the school district offers a 24/7 On-Demand Professional Learning tool that encompassed various instructional practices and resources to improve teacher effectiveness and learning outcomes, allowing teachers to select courses they were interested in attending (*Office of Professional Learning & Career Development*, n.d.). Figure 1 shows the percentage of teachers participating in selected PD activities.
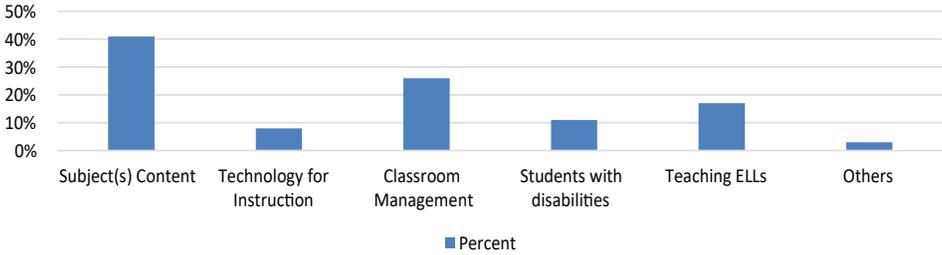
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Figure 1. Participating in professional development activities SY 2019–2020

The most prevalent topic of PD activities by teachers in 2019–2020 was subject content (40 percent), followed by a variety of classroom management strategies (26 percent), and teaching ELLs (17 percent). All participants mentioned attending on average two PD activities that focused explicitly on ELLs. In addition, teachers identified peer observations and collaboration as the most efficient pedagogical techniques for enhancing their competency skills and support for ELLs. Some participants found that seeking support from experienced teachers was most helpful in identifying good teaching strategies.

Participant 117 stated, "I like hands-on demonstrations and watching other teachers because it gives real-world examples." Participant 119 stated, "I think the most effective PD is when real lessons and units are presented to show how to support the students as opposed to vague strategies that they expect you to master instantly." Overall, this type of PD opportunity can be voluntarily pursued or required, depending on the school, district, and state level policies. Further studies on peer observation and collaboration analysis could highlight the limits and potential that could help strengthen teaching competencies.

Research Question 2

The second question asked, "How do primary teachers describe the role of professional development in enhancing teacher's competency?" This school district provided teachers with a professional development catalog and the opportunity to collaborate and observe their peers. Although a few teachers had described PD activities as not being helpful, a significant number of teachers reported positive feedback when implementing instructional practices in their classroom after receiving PD that addressed ELLs content.

The responses can be found in Table 2. The researcher asked participants to share their PD experience and how it built their competency skills to support their ELL students.

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Table 2. Teacher's Perception After Receiving Professional Development

Participants	Perception on Professional Development
120	It helped me to consider that all PPT slides created need to be done with a lot of images, and a lot of pictures that are labeled, in order for students who cannot read as easily are learning the meaning of words as they go. It's reminded me that the strategy of repetition is important, and to incorporate Spanish (the primary secondary language of our ELL students) into my lessons whenever possible.
107	Gave me strategies to support reading listening and speaking needs
119	The professional development focuses on ELD standards and incorporating ELL strategies in all subject areas.
118	We had a complete training in a program called Systemic ELD. Part of this was how to develop sentence frames to use in our content areas blocks.
116	The models and examples, as well as step by step techniques and variety of ideas.
115	The training helped me to learn ways to communicate with students and get to them on a personal level.
109	They have given me tools to use in my classroom.
106	As a native English speaker, I am not always aware of the challenges ELLs face. By attending training, not only was I introduced to those challenges, but I was also prepared to deal with those issues as they arise in the classroom.
105	Using images, dictionaries and hands-on materials were all gained during professional development.

The finding shows that teachers who received PD training that addressed ELL content reported having a higher confidence level in their ability to instruct ELLs than those who had not received any PD opportunities. Roughly half the teachers found the PD activities did not support their individual needs in the classroom. As participant 118 shared, "On the surface level no. Kind of feels like a lot of PD and instructional types of stuff focuses on the best-case scenario, and there are always a lot of hiccups and roadblocks trying to implement in the classroom." This is evident from previous literature reviews that showed many teachers entered their classrooms feeling unprepared to engage and support ELL students (Feiman-Nemser, 2018; Mellom et al., 2018; Villegas, 2018).

However, some participants pointed out that PD is not always helpful nor easy to implement. Those participants who received PD believed that more improvements should be made to support teachers' individual needs in the class-room. Furthermore, some PD activities focuses on the surface levels whether than going in-depth to address the challenges that occur in diverse classroom settings. Guskey (2002) stated, "What they [teachers] hope to gain through PD opportunities are specific, concrete, and practical ideas that directly relate to the day-to-day operations of their classroom." (p. 383). For teachers who receive PD activity addressing ELLs content, there is a level of dissatisfaction regarding how

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the content is delivered and a desire for more PDs that informs teachers how to serve second language learners.

Discussion

Professional development activities should be continuous throughout a teacher's professional career, promoting knowledge and skills to address the students, schools, and national needs (Avidvov-Ungar, 2016). For decades, many educators have used a variety of PD opportunities to enhance their knowledge of pedagogical skills. The primary models of professional development identified are:
a) training,
b) peer observation of teaching (PoT),
c) involvement in development,
d) study groups,
e) action research,
f) individually guided activities, and
g) mentoring (Guskey, 2000).
Extensive research has been conducted on PD trainings as a means to achieve effectiveness and students' learning achievements (Avidov-Ungar, 2016; Sims & Fletcher-Wood, 2020; Postholm, 2018).

Many scholars have identified a problem in the past couple of decades: a high number of teachers reportedly feel overwhelmed and unprepared to work with ELLs (Ariyanti et al., 2019; Villegas, 2018). In the United States, the population of ELLs is increasing rapidly in mainstream classrooms (Lopez, 2019). Researchers have predicted that by 2025, one out of every four students will identify as non-native English speakers. This study examined one U.S school district's methods of administering PD to see which type of PD opportunities were beneficial to help teachers working with ELL students.

The two research questions were "What types of professional development are optimal for supporting teachers working with ELLs?" and "How do primary teachers describe the role of professional development in enhancing teacher's competency?" The majority of participants stated that they attended virtual or on-campus workshops provided by the school district. The findings are not generalizable to the overall United States education system as limitations such as the changing sample size and all participants preparing for standardized test [Miami-Dade County School District].

The responses showed that teachers were not satisfied with the PD content being provided by the school district and felt improvements could be made to further support teachers' needs in multicultural classrooms. This paralleled results from other research studies that found that certain types of PD opportunities that are one-way learning often do not provide teachers with the resources to practice

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and reflect on new skills (Gomez and Diarrassouba, 2014; Garcia and Weiss, 2019; Nguyen, 2018). For this study, participants were satisfied with observation and peer collaboration to improve their knowledge and pedagogy skills. Compared to a single-based workshop, observation and peer collaboration connected teachers to what they wanted and needed to strengthen or improve their practice. Bates and Morgan (2018) asserted, "Collaboration supports a togetherness mindset and develops collective knowledge that extends beyond individual, isolated experiences in classrooms" (p. 624). A key element of collaboration requires a trusting environment for individuals to share, reflect, and solve problems within their practices (Darling-Hammond et al., 2017). When PD opportunities utilize collaboration effectively, the outcomes produce evidence-based conversations which change professional behaviors, tweak curriculum instructions, and focus on the next steps of meeting students' needs.

Some teachers found that observing veteran teachers modeling specific skills in their classrooms gave them a vision of what effective practices would look like before implementing those competencies. Using models and modeling can support teachers by providing a visual of the techniques and including observations of colleagues, videos, and sample lesson plans or units (Darling-Hammond et al., 2017). Modeling the different methods gives teachers an idea of what to expect and allows them to set attainable goals suitable for their student's needs (Bates & Morgan, 2018). As Guskey (2000) states, "Observations that are well planned, focus on specific issues, and provide follow-up to document improvement are generally the most effective." (p. 24). Researchers have found that when it comes to the relationship between PD and student learning outcomes, observation and peer collaboration seemed to help enhance teachers' competencies and student learning more than traditional workshops did (Desimone & Garet, 2015; Huber et al., 2020; Hunzicker, 2010). Therefore, school districts with high numbers of second language learners should consider providing teachers with PD opportunities that incorporate active learning through observation and peer collaboration.

Conclusion

Professional development opportunities can help to determine teacher effectiveness when they target subject matter content, instructional practices, and student learning. Garcia and Weiss's research (2019) found that teachers were not given the proper resources and time to practice and reflect on new instructional practices. Professional development experiences vary across the United States. Previous research has acknowledged the disconnect traditional one-shot training has on addressing teachers' wants and needs (Daniels et al., 2013).

In this study, eighteen teachers selected from Miami-Dade County School District were asked to identify PD activities were optimal for supporting their

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ELL students. The school district provided teachers with a digital platform to select PD activities that touch on the subject matter, classroom management, and technology. However, most teachers acknowledged not receiving any training focused on ELLs. Their dissatisfaction comes from a limited amount of PD that focuses on ELLs, and PDs are informative, making teachers passive learners. In addition, results showed that teachers found observing experienced teachers and collaborating with their peers to be the methods most beneficial for increasing competency skills to work with diverse students. This allowed teachers to witness classroom practices, thus enhancing their confidence to implement similar practices in their classrooms.

The sample size was a limitation in this study, therefore future research should expand the population sample to identify if similar findings could be drawn from other school districts across the country. Furthermore, research should closely examine student academic growth based on teachers' practices implemented after peer collaboration and observations. As the world transitions back to normalcy, school districts must consider new ways to make PD opportunities relevant to address the unprecedented challenges teachers now encounter post-pandemic. This includes providing teachers with what they strongly desire (Starks & Wissnink, 2019) and more PD opportunities that actively engage and builds teaching competency to support ELLs' learning needs.

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English Language Curicculum for Student Teachers Training to Perform in Cultirally Diversified Settings

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ABSTRACT

As Ukraine continues to move toward Europe and the rest of the world, it is crucial that teachers improve their English language competence. Teachers' language proficiency corresponds with their capacity to provide effective quality education for diverse classrooms to reach global competence. Cultural diversity in the school population is becoming the norm rather than the exception in Ukraine. The recent rise in immigration is accountable for the rapid and significant demographic changes in Ukraine's school-aged population. The study's primary objective is to assess student teachers' perspectives on the objective, content, teaching and learning process, and assessment and evaluation elements of the importance and sufficiency of the English proficiency curriculum implemented at Ukraine's faculty of education to meet the needs of the culturally diverse school population. The case study design was used as one of the research methods. The study's participants were 14 student teachers from four different faculties of education at Ukrainian universities. Participants were chosen using a criterion sampling model. The data was collected using an open-ended question form designed by the authors during the spring semester of the 2020–2021 academic year. The data collected was analysed using content analysis. The findings revealed that participants' attitudes about the objective aspect of the student teachers' English language curriculum were generally good. On the other side, it was determined that the curriculum was insufficiently tailored to students' needs, interests, and degrees of English language competence. Furthermore, participants identified insufficient time for activities, a limited selection of classroom activities (case study, collaborative work,

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discussion), and short course hours as unfavourable features. The implications of the results might help improve the English proficiency curriculum and equip student teachers to work successfully with school children who have a diversity of language and learning difficulties.

Keywords: case study design, cultural diversity, English language competence, English language curriculum, student teachers, Ukraine

Introduction

One of the eight key competencies that serve as the benchmark for how the EU Member States should incorporate lifelong learning into their strategies and infrastructure is "cultural awareness and expression". Cultural awareness affects our capacity to develop social, civic, and intercultural competencies and our feeling about initiative and entrepreneurship. In the lives of the twenty-first century, these competencies are undoubtedly closely connected and interdependent. People must continuously improve their skills, abilities, and attitudes in order to meet society's evolving requirements. One of the most critical competencies is the ability to convey one's culture. It takes more than just acquiring a particular knowledge base and skill set to strengthen a key competence. Applying the appropriate skills and expertise to fulfil challenging needs is crucial.

Culturally competent teachers should recognize each student's full potential, regardless of cultural background, and give the challenges necessary for them to accomplish their significant potential. They must be knowledgeable of their students' primary languages, backgrounds, and cultures to provide curriculum that is relevant to their students' lives. They must modify their curriculum to integrate their pupils' diverse cultural backgrounds in order to provide them with a more meaningful and collaborative educational experience. Building on students' culture and heritage not only enhances their academic success but also empowers them as persons. Teachers should involve their pupils in team-building activities in the classroom so that they may learn about and appreciate different cultures. Making cultural awareness and expression a reality in the classroom will thus require the establishment of suitable reference contexts, research into learning settings, good practices, and empirical methods (Education, 2016).

Ukraine has made significant progress in creating a modern educational system for the twenty-first century. The future of education in Ukraine must strongly emphasize equity and inclusion. As people's requirements for language learning have grown due to globalization, language learning and instruction have assumed critical significance (Ger & Bahar, 2018). In order to successfully educate students in a varied educational environment and promote their development of the necessary communication skills, future teachers must acquire English language proficiency at an appropriate level for engagement in contemporary worldwide society. All teachers must employ linguistically and culturally

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inclusive teaching methods to encourage students to engage in class activities. These methods might include scaffolding, fostering the use of foreign languages, and teaching, learning, and assessment. Understanding the cultural complexity of their school communities and how they affect the classroom is crucial for teachers. Teachers should broaden their sociocultural knowledge and offer inclusive, flexible, and relevant teaching and learning opportunities to enhance the learning process and outcomes for all students.

During language study and practice, considering the multicultural aspect of a student teacher entails improving one's proficiency in the target language and recognizing one's cultural circumstances and the ways in which they influence communication. Moreover, due to the close influence of culture, it is crucial to comprehend how crucial it is to create language curricula in a multicultural setting. To put it another way, language course curricula and syllabuses should be designed for the multicultural nature of students, their race and linguistic background.

The teacher training curriculum is a crucial component of the pedagogical education system since it illustrates how future teachers may acquire the essential competencies. Researchers argue that with the ever-changing world, a teacher training curriculum should be based on what is needed to keep the overall knowledge, skills and dispositions of practicing teachers solidly based, up-to-date and effective (Dembélé & Schwille, 2006). Therefore, the teacher education curriculum should include the subject content and the teaching method of the content. Trainee teachers should possess the knowledge, attitudes, values and skills needed to perform their duties effectively in the classroom and school. Teacher education programs should prepare teachers to develop students who can function effectively in the socioeconomic and political environment of the 21st century. This includes preparing people to recognize, accept and appreciate differences in attitudes, lifestyles, languages, religions, races, cultures or genders. Schools around the world are very concerned about embracing diversity as a whole with tolerance.

Due to changing classroom demographics, teachers must be equipped to recognize and work with students from cultures different than their own. In the meantime, teachers are being asked to teach populations they know very little about. On the other hand, there has been much theoretical debate concerning teachers' assigned responsibilities and the need for cultural diversity management training (González & Darling-Hammond, 1997). In its contemporary history and concerning migration, Ukraine has been mainly a sending rather than a receiving country. Approximately 400,000 foreigners have resided permanently or temporarily in Ukraine since the beginning of 2019. This migration has changed the composition of the student population in Ukraine. In the year 2018–2019, for example, the percentage of migrant children comprised 2.1% of the total student population (State Statistics Service of Ukraine, 2019). It should be highlighted that cultural diversity is not just tied to the issue of migration. It exists, but

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acountry's educational system mostly neglects it. However, most academics and researchers in multicultural education believe that for it to be implemented successfully, institutional adjustments must be undertaken, including modifications in the curriculum, teaching materials, and teaching and learning methods (Buxton & Lee, 2007). Despite the fact that every language is a part of a culture, it serves and reflects different cultural perspectives. Nonetheless, there are regions where populations have a similar cultural orientation but speak languages that are not only mutually unintelligible but also structurally dissimilar. This is especially true when we have a class of pupils learning and speaking English from various ethnic backgrounds.

A well-defined curriculum involving teaching goals and particular objectives was one of the important elements for offering effective and high-quality language training. As a result, developing a high-quality curriculum is critical to achieving high-quality language education. The English language training program for student teachers at the university where this study is being conducted has particular aims. First, it aims to provide students with a broad awareness of the English language and cultural diversity. Second, it educates and improves students' English communicative skills in typical social and professional situations to a somewhat proficient level. It ensures that they will obtain the professional qualifications required to perform effectively in culturally diverse school classrooms. The curriculum, in particular, provides student teachers with appropriate study skills for higher education while enhancing language competence.

Moreover, the goal of the curriculum is to develop students' perceptions and research ability for language and cultural concerns. Furthermore, master's students can acquire the B2 level of English language competency according to the Common European Framework of Reference for Languages (CEFR).

However, almost nothing is investigated regarding Ukrainian institutions' English language curriculums for education majors, and it is unknown what the curriculum's strengths and weaknesses are. It is debatable whether students are satisfied with the curriculum, which approaches teachers employ most frequently in class, if the resources are adequate to satisfy the educational objectives, and whether the assessment processes are favourable for teaching. The current study seeks to provide solutions to these issues. Evaluating the English language curriculum in Ukrainian universities from the perspectives of student teachers training to work in diverse contexts is central to the research. It is expected that the study findings will contribute to modifying and improving the English language curriculum at education faculties at the university and enhancing the cross-cultural quality at the tertiary level in the future. These questions will help spot whether the curriculum can train student teachers to work in a diversified environment:

1. What are student teachers' views about the objectives of the English language curriculum?

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2. What are student teachers' views about the content element of the English language curriculum?
3. What are student teachers' views about the English language curriculum's teaching and learning process element?
4. What are student teachers' views about the assessment and evaluation element of the English language curriculum?

Methodology

Study Design

One of the qualitative research methodologies used in this study was a case study. Case studies analyses an event in its current and real context, provide extensive descriptions and explanations, and aims to conduct an in-depth investigation of a system with defined limits (Merriam, 2010). The current study aimed to examine in-depth student teachers' views on the elements of the English language curriculum. A criteria sampling strategy was used to choose participants. A review of the literature on curriculum and its components was undertaken, and studies on the subject were explored to establish the participants' questions.

Study group

This study included 14 student teachers from four different faculties of education at Ukrainian universities, ranging in age from 21 to 25. A criteria sampling model, one of the purposeful sampling methods, was used to choose participants. As a result, studying in faculties of education at Ukrainian universities as a student teacher was used as a factor for selecting participants. Because of research ethics, the names of the individuals were not included. Instead, students that took part were assigned the codes S1, S2, ... S14. It is emphasized that received information would only be exploited for scientific purposes.

Data Collection Process

The qualitative data were collected by open-ended questionnaires distributed to university students. The survey form was distributed to the student teachers using "Google Forms", and the students responded via "Google Forms". Consequently, 14 student teachers who were reachable and answered all questions were included as research participants. Data collection was undertaken during the spring semester of 2020–2021.

Data analysis

The data collected was analysed using content analysis. Before the questionnaires were sent to the 14 student participants, detailed instructions were

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given to ensure the reliability of their replies. To guarantee the validity, the data used included only direct quotes from the students, so as to accurately reflect their opinions. The data was collected in Ukrainian and translated into English without changing opinions expressed. The coding reliability was evaluated using the Miles–Huberman formula while obtaining the codes after the content analysis. The reliability percentage is obtained from the formula (Reliability Percentage = Agreement / (Total Agreement + Disagreement)), and at least 70% reliability is expected to be obtained (Miles and Huberman, 1994). Professor Avsheniuk conceived the study and was in charge of overall direction and planning. Seminikhyna and Lutsenko aided in developing the theoretical framework, collecting and interpreting the results and worked on the manuscript. All authors contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript.

Results

Findings related to the opinions of students on the objectives of the English language curriculum

The first question of the study was aimed to determine the opinions of student teachers on the objectives of the English language curriculum for education majors. It was seen that students' opinions were grouped under two topics as "strengths" and "weaknesses." The obtained topics, codes and the frequencies are presented in Table 1.

Table 1. Students' opinions on the objectives of the curriculum

Topics	Codes	Frequency (f)	Coder reliability %
Strengths	Concise and accurate	f 11	76
	Satisfy future student's needs	f 9	64
	Based on student-centred approach	f 10	71
	Applicable in workplace	f 8	57
	Providing intercultural value to students in preservice training and in-service context	f 7	50
	Measurable	f 6	42
	Teach students to perform skills they will perform on the job after the study.	f 6	42
Weaknesses	Including misleading concepts	f 5	36
	Insufficient to develop student autonomy	F 7	50
	Insufficient to work in a diversified setting	f 8	57

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As seen in Table 1, some opinions were grouped under the topic of "strengths". Under this theme, the most frequently expressed codes were: "concise and accurate" ($f = 9$); "satisfy future student's needs" ($f = 7$); "applicable in the workplace" ($f = 8$); "based on student-centred approach" ($f = 7$) and "teach students to perform skills they will perform on the job after the study" ($f = 6$). On the other hand, the participants stated their negative opinions about the curriculum's objectives under the theme of "weaknesses". Under this topic, the most frequently expressed codes were: "including misleading concepts" ($f = 5$), "insufficient to develop student autonomy" ($f = 7$) and "insufficient to work in a diversified setting" ($f = 5$). Direct quotations from the participants on these topics and codes are given below.

> ... *In my opinion, determined objectives in the curriculum are concise and accurate. In other words, the sentences are comprehensible to students* ... (student 4).

> ... *It is possible to state that the objectives were organized to teach students to perform skills they will perform on the job after the study* ... (student 6).

> *They are insufficient to work in a diversified setting. In a way, it seems complicated, but it is critical to creating an open and inclusive workplace environment, so all team members feel empowered to contribute* (student 5).

> *To my mind the objectives do not develop student autonomy. Instead, I mean that it is critical for the 21st-century knowledge society that the educational system cultivates autonomous, life-long learners capable of independently constructing intercultural knowledge and developing relevant skills to effectively adapt to a challenging global environment* (student 7).

Findings related to the opinions of student teachers on the content element of the English language curriculum

The second research question of the study aimed to determine student teachers' opinions on the content of the English language curriculum at the faculties of education.

According to Table 2, it was seen that some opinions were grouped under the topic of "appropriate for students". Under this topic, the most frequently expressed codes were as: "Self-sufficient in learning" ($f = 9$), "Matches the aim of the curriculum" ($f = 8$); "Suitable to the learners' present state of learning" ($f = 5$); "Appropriate organization of the content" ($f = 4$) and "Provides awareness of individual's and other's culture" ($f = 11$).

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Table 2. Students' opinions on the content of the curriculum

Topic	Codes	Frequency (f)	Coder reliability %
Appropriate to work in a diversified setting	Self-sufficient in diversified learning	f 10	71
	Matches the aim of the curriculum.	f 8	57
	Encouraging active participation of students	f 10	71
	Suitable to the learners' present state of learning	f 5	36
	Relates to the authenticity of the content selected	f 8	57
	Provides awareness of individual's and other's culture	f 11	76
	Appropriate for different methods and techniques	f 4	29
	Appropriate organisation of the content	f 5	36
Inappropriate to work in a diversified setting	Irrelevant to the language level of the student	f 8	57
	Not interesting	f 4	29
	Unable to integrate the four language skills	f 8	57
	Including too much grammar	f 7	50
	Irrelevant topics	f 9	64
	Not authentic	f 7	50
	Learning experience doesn't cater to the needs of different types of learners by providing different types of experiences	f 5	36

On the other hand, the participants stated their negative opinions under the topic of "Inappropriate for students", including the codes such as "Irrelevant to the language level of the students" ($f = 8$); "Irrelevant topics" ($f = 7$); "Including too much grammar" (f = 7); "Unable to integrate the four language skills" ($f = 8$); "Inappropriate for developmental levels of students" ($f = 7$) and "Learning experience doesn't cater to the needs of different types of learners by providing different types of experiences" ($f = 6$). The following excerpts are related to the topic and codes above.

> *It can be said that the content self-sufficient in learning. I mean the content equips students with skills and knowledge that can help them accomplish tasks on their own ...* (student 2).

> *... the content is interesting and uncomplicated encourages the active participation of students ...* (student 6).

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I found out that the content was with irrelevant topics. While learning, it made me bored and demotivated (student 3).

The most prominent negative aspect of the content is that it does not integrate the four language skills. Especially, activities based on listening and writing skills are limited or not present at a level student can comprehend (student 2).

Findings related to teachers' opinions on the English language curriculum's teaching and learning process element.

The third research question of the study aimed to determine student teachers' opinions on the teaching and learning process element of the English language curriculum at the faculties of education. It was seen that students' opinions were grouped under two themes "Disadvantages" of the learning process" and "Advantages of the learning process". The obtained themes, codes and frequencies are presented in Table 3.

According to Table 3, it was seen that some opinions were grouped under the topic of "Advantages of the learning process". These opinions reflected participants' negative attitudes toward the teaching and learning process element. Under this topic, the most frequently expressed codes were as: "Insufficient time for activities" ($f = 9$); "Unable to meet students' interests" ($f = 9$); "Insufficient course hours" ($f = 8$) and "Inappropriate for students' different language levels" ($f = 6$).

Table 3. Students' opinions on the teaching and learning process of the curriculum

Topic	Codes	Frequency (f)	Coder reliability %
Advantages of learning process	Consistency of methods and techniques with the objectives and the content	f 8	57
	Learning activities are in relation to real life situations	f 5	36
	Promotes team work	f 7	50
	Promotes intercultural communicative competence	f 7	50
	Immediate feedback from peers, teachers	f 5	36
	Able to reveal personal differences	f 4	29
Disadvantages of learning process	Insufficient time for activities	f 9	64
	Unable to meet students' interests in intercultural collaboration	f 8	57
	Insufficient course hours	f 8	57
	Unable to promote authentic environment	f 6	42
	Inappropriate for students' different language levels	f 9	64

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The participants expressed their positive opinions under the topic of "advantages of the learning process". Under this theme, the most frequently expressed codes were as: "Consistency of methods and techniques with the objectives and the content" ($f = 8$) and "Promotes teamwork" ($f = 4$);" Immediate feedback from peers, teachers ($f = 4$).

In this regard, the participants' opinions are reflected in the following comments:

> *... there is limited time for activities. This is a demotivating factor ...* (student 7).

> *Frankly speaking, more course hours are needed to meet different student's linguistic levels ...* (student 10).

> *What I like is immediate constructive feedback from my teacher. It motivates me to learn more* (student 13).

> *Some of the activities help students engage in the teamwork willingly and helps to develop our speaking skills ...* (student 14).

Findings related to students' opinions on the assessment and evaluation element of the English language curriculum.

The fourth research question of the study aimed to determine teachers' opinions on the assessment and evaluation element of the English language curriculum. It was seen that teachers' opinions were grouped under two themes as "Variety of assessment techniques" and "Deficiencies in assessment and evaluation process". The obtained topics, codes and frequencies are presented in Table 4.

Table 4. Students' opinions on the assessment and evaluation element of the English language curriculum

Topic	Codes	Frequency (f)	Coder reliability %
Variety of assessment methods	Project assessment	f 9	64
	Test assessment	f 10	71
	Individual assessment	f 10	71
	Peer feedback	f 4	29
Deficiencies in Assessment Process	Presentation assessment	f 4	29
	Limited time for individual evaluation	f 9	64
	Lack of sufficient resources about assessment and evaluation	f 7	50
	Lack of peer review	f 6	42
	Unable to measure speaking skills	f 10	71

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According to Table 4, it was seen that the participants stated the assessment techniques they used. These were grouped under the topic of "providing different assessment techniques". Under this theme, the most frequently expressed codes were as: "Project assessment" ($f = 11$), "Test assessment" ($f = 10$) and "Teacher assessment" ($f = 10$). On the other hand, the participants stated their negative opinions related to assessment and evaluation elements under the topic of "Deficiencies in assessment and evaluation process", including the codes such as "Limited time for individual evaluation" ($f = 10$); "Ineffective assessment and evaluation because of overcrowded classes" ($f = 9$); "Lack of sufficient resources about assessment and evaluation" ($f = 7$) and "unable to measure speaking skills" ($f = 7$). Direct quotations from the participants on these themes and codes are given below.

> *... In my opinion, there is limited time to evaluate students individually. I consider this as an obstacle in terms of conducting an effective assessment process ...* (student 1).

> *To my mind, the curriculum lacks fair peer reviewing, which increases motivation ...* (student 7).

> *... I think that if there are evaluation guidelines in assessment and evaluation part of speaking in the course book, we can manage the process under these rules. These deficiencies should be fulfilled* (student 11).

Discussions

The study's findings indicate that master's students in education faculties were relatively satisfied with the English language curriculum. According to the student questionnaires, students were positive about the curriculum's objectives, content, and evaluation but negative about teaching process.

Students' reflections on the curriculum received high scores for the first element of the curriculum. Most students stated that the objectives were student-centred, concise, and accurate. However, participants indicated that the objectives were insufficient to foster learner autonomy. This finding is supported by research done by Benson (2012), which indicated that institutional and policy restrictions are one of the constraints in the English language curriculum that prevent students from acquiring language learner autonomy. According to Benson, there are four constraints when implementing language learner autonomy: institutional constraints, policy constraints, conceptions of language and language teaching.

The second research question explored student teachers' opinions about the content of the English language curriculum. Most participants claimed that the curriculum's content encourages students' active participation, is self-sufficient in

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learning and relates to the authenticity of the materials. Project-based learning was named a favourable component of the curriculum that demonstrated positive affective benefits in content knowledge and helped build relationships and collaboration between groups, communication and reflection within real-world diversified settings. Siwatu (2007) also listed knowledge about linguistic and cultural diversity as essential. It provides culture-awareness of individual's and other's cultures. It corroborates with studies showing that cultural awareness needs to be integrated into teacher education (Byram, 2012), and curriculum and coursebook designs need to be done accordingly (Birckbichler, 2015). These findings suggest that the content helps students learn a foreign language. However, most student teachers expressed neutral views regarding the study's materials and that the experience they gained did not adapt to the demands of diverse classes of learners with different types of experiences.

Furthermore, most student teachers stated that the materials were inappropriate and that they could not incorporate the four language skills. These observations contradict Widdowson's (1978) research, which advocated combining the four language skills in instruction to increase learners' proficiency levels and enable advanced language acquisition. Widdowson emphasizes that almost all language functions are included in the approach for integrated and communicative language training in general and in English for specific purposes. Widdowson study highlights that practically all language functions are part of sociolinguistic contexts and different types of discourses. He even points out that separate teaching of language skills is not highly recommended from the communicative point of view.

Regarding the teaching and learning process types, the study results showed parallel perceptions, which show that it promotes teamwork that develops intercultural communicative competence. This type of contact helps pupils improve their communication skills. On the other hand, students reported dissatisfaction with the limited time for activities and pointed out that the English language curriculum was inappropriate for the students' various language levels.

Finally, participants reported that the critical assessment methods for the curriculum were project assessment, exam, and individual assessment, all of which were highly ranked. It backs up the argument that providing helpful feedback on various assessment tasks may improve learners' performance (Sambell et al., 2017). This finding is corroborated by Gibson and Shaw's (2011) research, which revealed that typical summative assessment techniques include unit tests and final presentations or projects. However, student teachers pointed out that the assessment techniques were inadequate to evaluate speaking skills and highlighted concerns about limited time for individual evaluation and a lack of appropriate resources to ensure transparency in the assessment and evaluation process. The scoring method was seen as relatively fair because there was a significant

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disparity across various faculty members. These findings contradict Rogler (Rogler, 2014), who argued that transparency in assessment involves students in the evaluation process. They are also assisted in comprehending the exam style and determining how to rate their answers or performance. Another requirement for a meaningful evaluation is reliability.

Overall, positive student reflections on the capacity of the English language curriculum to equip future teachers to function in diverse classrooms included factual accuracy, student-based approach to objectives, self-sufficiency in learning, and promotion of students' engagement.

Implications of the Study

The study's findings have crucial implications for tailoring the English language curriculum for university teacher majors. The data demonstrate that most students had good opinions regarding the curriculum's objectives, content, and assessment, which they rated highly. However, most students were dissatisfied with the teaching-learning process, indicating that it could be improved. The university should survey to research students' professional interests and the topics they intend to take so that the program may enhance its objectives and subjects that fulfil their expectations. To resolve the problem of course materials, lecturers might survey students' expectations of that topic and then use several credible sources to compile the core course book rather than relying on a single course book. Another important practical implication is that the program's educational objectives for English language majors should become more flexible, with the goal of assisting learners not only in achieving a certain level of language proficiency but also in obtaining the necessary knowledge to work in a multicultural environment. In terms of evaluation, the findings from this study show that the university should provide university lecturers with consistent, detailed grading criteria. Furthermore, the university should review the evaluation form of specific disciplines and fine-tune the grading score technique.

In conclusion, the current study aimed to contribute by investigating future teachers' perceptions of the effectiveness of the English language curriculum. The study has reinforced the notion that the viewpoints of students who play significant roles in the curriculum implementation process are critical in determining the strengths and weaknesses of the existing curriculum. Based on the data, it is possible to claim that the curriculum has certain flaws and should be altered. More research is needed to examine the causes of the difficulties identified in this study. Although the study met its objectives, there were some inherent flaws.

This evaluation study is based solely on students' evaluations of the English language curriculum at a few Ukrainian institutions, which cannot have identified all of the English language program's strengths and shortcomings. Second,

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the study was done with a limited number of participants, only 14 students, which may have impacted the study's generalization. Furthermore, the data was gathered primarily from current students rather than graduates of the program, which may have been analysed to see whether or not the program satisfied students' requirements as its initial clearly defined objectives. Finally, the study's broad scope is a significant limitation. This study has raised several concerns in need of further investigation. First, more objective data should be acquired to avoid subjective data. Second, it may be possible to study a bigger group of participants to collect more data in future studies. As a result, more research should be carried out utilizing alternative universes and samples to enhance the generalizability of the findings achieved in this study and compare the findings.

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The Use of Online Dictionaries During Web-Based Collaborative Writing Among EFL Learners

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ABSTRACT

This study is about an investigation of Turkish high school English as a Foreign Language (EFL) learners' use of online dictionaries during asynchronous web-based collaborative writing (CW) activity. 26 groups of three EFL learners ($N = 78$, 16 years) were involved in a-two-hour CW task in English outside the classroom setting in a Facebook group. Data were gathered from 78 online researcher-participant interviews and 8,700 discussion threads collected from 26 groups. The study's findings revealed that 80% of participants used their mobile phones to undertake the activity, so they preferred online English dictionaries with mobile applications. Participants with high English proficiency mainly used online English dictionaries to search for the collocations of words to vivify their sentences. Also, those participants directed their group members to use the online dictionaries to independently identify their vocabulary mistakes and validate their existing vocabulary knowledge. Participants who had low English proficiency mainly used online bilingual dictionaries (Turkish-English) to look up the unknown words and then got their group partners to verify their use in their collaborative writing pieces. Additionally, Google Translate was utilised by those participants to serve a purpose of an online dictionary. This study provides useful insights for researchers and EFL teachers about how online dictionaries were used during the web-based collaborative writing process.

Keywords: EFL writing, collaboration, online writing, small group learning, foreign language, dictionaries

Introduction

Collaborative writing (CW), which can be defined as "an [instructional] activity where there is a shared and negotiated decision-making process and a shared responsibility for the production of a single text" (Storch, 2013, p. 3), has been extensively researched by the foreign/second language writing

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researchers by dint of the constantly evolving technology-enhanced collaborative tools and increasing accessibility of Web 2.0 technologies (Li, 2018; Bikowski & Vithanage, 2016).

A recent review study by Zhang and Zou (2021) has indicated that to date, previous studies have used the following web-based environments such as wiki ($N = 21$ studies), Google Doc ($N = 6$ studies), offline word processor ($N = 3$ studies), Facebook ($N = 2$ studies), chat ($N = 2$ studies) and forum ($N = 2$ studies) when undertaking the CW activities in second/foreign language writing contexts. Additionally, previous studies on web-based CW explored

1) patterns of peer interaction and learners' co-constructed texts (e.g., Abrams, 2019; Li & Zhu, 2017),

2) peer affective factors (e.g., Selcuk & Jones, 2022; Selcuk, 2017), individual writing versus CW (e.g., Alsubaie & Ashuraidah, 2017), and the influence of peer leadership during the CW process (e.g., Selcuk, Jones & Vonkova, 2019a).

Nevertheless, few studies (e.g., Selcuk, Jones & Vonkova, 2019b) investigated the Information Communications Technology (ICT) tools used by the learners during the CW processes. Therefore, to fill a gap in the literature, this current study examines the use of online dictionaries during web-based CW among 26 groups of three in a total of 78 learners of EFL.

In their study, Selcuk et al. (2019b) explored for what purposes Google Translate (GT) as an ICT tool was used among Turkish high school EFL learners ($N = 6$) during seven weeks of web-based CW. The findings showed that participants who reported that they were not confident with their English knowledge and were feeling anxious writing in English used GT in the pre-writing stages of writing. Also, the study found that participants with lower grades in English used GT more frequently than participants with higher grades in English. Another emerging finding was that a group member who mainly led the group writing process encouraged them to use GT to start with their writing, which enabled some group members to gain self-confidence in writing in English.

Theoretical Framework

The main theoretical bases of the web-based CW in connection with teaching and learning EFL writing in this study are social constructivism (Vygotsky, 1978), the process-oriented approach (Hyland), and the sustainable smart pedagogy framework proposed by Daniela (2019) (also Lytras et al., 2018).

Collaborative work undertaken with peers or in small groups in an EFL writing context is mainly supported by a social constructivist framework in which there are affordances for interactive learning and knowledge-sharing (Storch, 2019). Furthermore, the process-oriented approach to teaching EFL

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writing (Hyland, 2009) was considered the most suitable for the present study for the following reasons. This approach is a non-linear and recursive approach to writing that comprises planning, drafting and revision, and editing activities. As argued by Steele (1992) and Hyland (2003), this approach would involve peer collaboration during the writing process, involving learners in brainstorming, group discussion, peer feedback and CW. The web-based CW activity was designed based on the sustainable smart pedagogy framework by Daniela (2019) (see Table 2) because, as argued by Selcuk and Jones (2022), the activity is to be undertaken synchronously anywhere and anytime; students opting in were considered 'intellectually smart', social, and motivated when doing the activity and the learning environment was technologically enhanced with the use of up-to-date laptops and smartphones. The 'smart pedagogy' aligned with the writing process and group members' roles as fluid and dynamic, enabling students to develop meta-cognitively during the writing process and to be developers of technology used in this context.

Table 1. Smart pedagogy framework

S	smart (in the sense of intellectual smartness), social
M	meta-cognitively developed and motivated
A	anywhere, anytime (in the sense of a learning process that is flowing across the temporal and spatial borders)
R	rapidly changing
T	technology enhanced, which takes into account the peculiarities of human development, the taxonomy of the educational process where the next generations are using the benefits of technology, and Smart Pedagogy bringing the students of the next generations in front of progress to serve as developers for new levels of innovation.

Source. (Daniela, 2019, p.16)

Aims and Research Questions

This study aimed to investigate how and which online dictionaries were used among 26 groups of three ($N = 78$) Turkish high school EFL learners during a two-hour web-based CW activity. Considering the aim of the study, we formulated the following research questions:

1. How do EFL learners make use of online dictionaries as an ICT tool during the web-based CW?
2. Which online dictionaries do EFL learners benefit from as an ICT tool during the web-based CW?

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Methodology

Participants

Seventy-eight EFL learners who were 10th graders (57.7% females and 42.3%, males, 16 years old) in a public high school in Izmir, Turkey, volunteered to participate in the study. These seventy-six participants were asked to form a group of three (N = 26 groups) and undertake a CW task of writing a short story in English synchronously in a Facebook (FB) group outside school hours. The CW task lasted around two hours. Before the study's commencement, official consents were obtained from the Provincial Directorate of National Education, the school's principal, and all participants' parents.

Before group participants started their collaborative short story writing task, they were asked to self-assess their English proficiency on a scale of five (elementary, pre-intermediate, intermediate, upper intermediate and advanced). Moreover, the participants' teacher of English was asked to evaluate all participants' English proficiency on the same scale of five.

Table 2 displays participants' self-assessed English language proficiency and their teacher's evaluation of participants' English proficiency.

Table 2. Participants' self-assessed English language proficiency and their teacher's evaluation of participants' proficiency in English

Teacher's evaluation						
Self-assessed English level		Elementary	Pre-Intermediate	Intermediate	Upper Intermediate	Total
Starter	F	5	0	0	0	5
	%	21.7	0	0	0	6.4%
Elementary	F	9	7	**1**	0	17
	%	39.1	21.9	5.3	0.0	21.8%
Pre-Intermediate	F	8	19	3	1	31
	%	34.8	59.4	15.8	25.0	39.7%
Intermediate	F	1	6	12	1	20
	%	4.3	18.8	63.2	25.0	25.6%
Upper Intermediate	F	0	0	3	2	5
	%	0	0	15.8	50.0	6.4%
Total	F	23	32	19	4	78
	%	29.48%	41.3%	24.36%	5.13%	100,0%

According to the Turkish Ministry of National Education (2011), 10th-grade students' English level is expected to be pre-intermediate or A2, according to the Council of Europe (2001). A2 level language users are categorised as 'basic users' by the Council of Europe (2011, p. 25), and their capabilities are described as follows:

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> *They can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g., basic personal and family information, shopping, local geography, employment). They can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters. They can describe aspects of his/her background, immediate environment and matters in areas of immediate need.*

Concerning the skill of writing, the Council of Europe (2001) highlights that A2 level language users should be able to write simple short notes and messages in areas of immediate need. They need to be able to write an elementary personal letter, for example, thanking someone for something.

Web-based Collaborative Writing Activity Design

Participants in groups were asked to write a short story not less than 150 words and no more than 300 words in English with their group members collaboratively in a FB group created only for the study. Participants were asked to undertake this writing activity outside of school hours online. During the writing activity, 80% of participants reported using their smartphones to engage and interact with the discussion sessions in a FB group. Participants in groups were told to complete their short stories within two hours. Five volunteer teachers of English served as a facilitator of this writing activity. The facilitator's role was only to provide participants with writing instructions at the beginning of the writing task.

Participants reported that they had not previously undertaken a collaboratively regulated learning activity outside the classroom. Their writing experience in secondary school classrooms was limited to perfunctory textbook exercises with little collaboration. As argued by Aydin and Özdemir (2019), EFL learners in Turkish secondary schools generally have insufficient writing practice in English lessons due to factors such as time constraints, inadequate writing instruction, exam-oriented classrooms, grammar/reading-based textbooks, and teachers' attitudes toward EFL writing, all of which serve to reduce opportunities for students to develop their writing skills. Against this backdrop, it was decided to use the FB group as the technological setting of the study.

Data Collection Methods

This study mainly gathered data from 78 online researcher-participant interviews and 8,700 written discussion threads collected from 26 groups. The researchers interviewed each seventy-eight participants using Facebook Live Chat. Each participant interview was recorded and lasted around 10–15 minutes. To gain a deeper understanding from the interviews, we also collected all 26 groups' written discussion threads ($N = 8,700$) from the FB group. Before

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the CW activity, all participants were asked to discuss in their FB groups in a written manner. The rationale behind that decision was to collect information from participants' interactions during the CW process.

Data Analysis Procedure

The group interviews, along with the online written facilitator-participant chats and the FB discussion boards enabled us to gather different types of qualitative data sets. We analysed each data source using an open coding analytical approach (Saldana, 2009). We used open coding because there is no existing parallel research therefore no previously existing analytical framework available in the Turkish public high school context.

Findings

Based on the overall evaluation comprised of participants' self-assessed English language proficiency and their teacher's evaluation of participants' proficiency in English in Table 2, participants' ($N = 78$) achievements in English subject were grouped into four categories (1. low Achievers, 2. Average Achievers, 3. High Achievers, and 4. Very High Achievers). Additionally, based on the analysed data from researcher-participant interviews and participants' written discussion threads, Figure 1 was created to illustrate the relationship between participants' English language achievements and their online dictionary preference during the CW process.
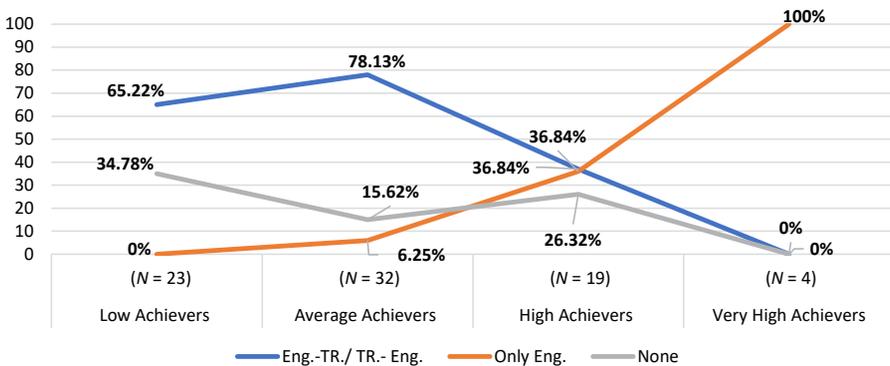

Figure 1. Relationship between participants' English Language achievements and their online dictionary preference during the CW process

Note. Eng. TR./ TR.-Eng. (Bilingual), Only Eng. (Monolingual)

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Low Achievers

23 participants (29.48%) among seventy-eight were considered 'low achievers' in the light of the overall evaluation of participants' self-assessed English language proficiency and their teacher's assessments of their proficiency in English. Based on the analysed data on web-based researcher-participants interviews and online written discussion threads, it is found that low achievers avoided using monolingual online English dictionaries due to their low language proficiency in English. Most low achievers used bilingual dictionaries, Turkish-English or vice versa during the CW process. Other than that, some low achievers (34.78%) stated that they used neither online nor printed dictionaries during the CW process.

Most low achievers reported using Google Translate (GT) as an online dictionary when working with their group partners during the CW process. As 80% of the participants reported undertaking the CW activity using their mobile phones, most participants said they used GT's mobile app during the task. Moreover, their primary purposes of using online dictionaries were listed as (1) looking up unknown words and (2) getting their group partners to verify their use in their CW pieces. For example, one participant expressed,

> *I rarely write in English, and it was a stressful activity for me to produce sentences in English for this activity. However, Google Translate (GT) helps me a lot when choosing the most appropriate English word for me ... I first produce my sentence in Turkish and then get it translated using GT, and I do not need to spend hours searching for the right English word for my sentence* (Participant 23).

Another participant highlighted,

> *GT translated 'Sally iyi Fransızca konuşur' [Sally speaking French well] as Sally speaking English good. However, my group partner corrected the sentence and told me I should use 'well' instead of 'good'. After that, I felt more comfortable writing in English as I knew that my [group partner] would correct my written mistakes* (Participant 72).

Average Achievers

Of 78 participants, 32 (41.3%) were considered 'average achievers' in connection with the overall evaluation of both participants' self-assessments and their teacher's assessments of students' proficiency in English. Based on the analysed data on web-based researcher-participants interviews and online written discussion threads, it was discovered that most participants used bilingual dictionaries (Tr.-Eng.; Eng.-Tr.). Even though most used Google Translate as an online dictionary, the participants also used the mobile apps of Tureng and Sesli Sözlük online dictionaries. As reported by the participants, the primary purposes of using online dictionaries during the activity were

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1) to search for the unfamiliar words that their group partner(s) used in the co-constructed text and
2) to diversify the words used in the Google Translated text.

Some average achievers (15.62%) said they did not use a dictionary (neither online nor printed) when doing the CW writing task. Few average achievers (6.25%) professed that they also used online monolingual dictionaries to verify the meanings and usages of the words they had already looked up in online bilingual dictionaries. For instance, one participant explained,

> *I did not know that advice is an uncountable word. In Turkish, you can make it countable. I checked 'advice' in the online Cambridge Dictionary from my phone to find out if it says anything about the plural form of the word and found that 'a piece of advice' could be used for the plural use of the word* (Participant, 45).

High Achievers

19 (24.36%) participants among seventy-eight were considered 'high achievers' in the overall evaluation of both participants' self-assessments and their teachers' assessments of students' proficiency in English. Based on the analysed data on online researcher-participants interviews and written discussion threads, it is found that among high achievers, the number of participants who used online bilingual (36.84%) and monolingual (34.84%) dictionaries was even. Additionally, some high achievers (26.32%) reported that they did not use any dictionary during the CW activity. Interestingly, among high achievers, none of the participants indicated that they used Google Translate as an online dictionary. Some said they used Tureng and Sesli Sözlük. Concerning the monolingual dictionaries, Online Cambridge Dictionary, Online Oxford Dictionary, The Free Dictionary and Online Collins Dictionary were the most frequently used online dictionaries among high achievers. The primary purposes of online dictionaries for the high achievers were to search the synonyms of words they already know and verify the correctness of the selected word they use in the co-constructed text. Most high achievers who used the online dictionaries when undertaking the CW activity felt responsible for leading their group. For example, one participant explained,

> *I attached too much importance to the correctness and appropriateness of my word choices as the other two group partners were seeking help from my vocabulary and grammar knowledge, and I felt that I had become the teacher of the group. Therefore, I checked Cambridge Dictionaries several times during the activity to be sure I was using the right word* (Participant, 29).

Very High Achievers

4 (5.13%) participants among seventy-eight were considered 'very high achievers' based on the overall evaluation of both participants' self-assessments

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and their teachers' assessments of students' proficiency in English. Based on the analysed data on online researcher-participants interviews and written discussion threads, it is found that all very high achievers only used monolingual dictionaries when undertaking the CW activity. The primary purposes of online dictionary use for very high achievers were to search collocation of words, search sample examples with the words they already know, and find synonyms of the already known words to diversify their writing in English. Also, very high achiever participants were instructing their group partners about how monolingual dictionaries will potentially improve their vocabulary knowledge and selecting an appropriate word for their writing. The following episode was taken from one of the group's written discussion threads and illustrating how very high achiever (P24) was correcting his group partners' (P2, low achiever) vocabulary mistake and showing how monolingual dictionary will help him rectify his error.

P2: I would say 'Jack was at home only'.

P24: At home only?

P2: I mean, Jack was at home without other people.

P24: hahaha... [laughter sign] that is funny! Only and alone give the same meaning in Turkish, but you should use 'alone', not 'only'. Only your sentence is used in the adverb form, not the adjective form. If you want to use it only, you can use it this way. 'Jack was the only person at home.'

P2: Okay

P24: Check these out https://dictionary.cambridge.org/dictionary/english-turkish/alone?q=ALONE, https://sentence.yourdictionary.com/alone

P24: There are several sample sentences about 'alone'. For example, 'leave him alone; he is tired.'

P2: Okay, understood, thanks.

Discission and Conclusion

This study aimed to investigate how and which online dictionaries were used among 26 groups of three (N = 78) Turkish high school EFL learners during a two-hour web-based CW activity. The following two research questions were asked considering the aim of the study:

1) How do EFL learners make use of online dictionaries as an ICT tool during the web-based CW?, and
2) Which online dictionaries do EFL learners benefit from as an ICT tool during the web-based CW?

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The findings revealed that participants who were categorised as 'low achievers', mainly used bilingual dictionaries when undertaking the web-based CW activity. It is understood that GT facilitated low achievers' writing process which concurs with the findings of Selcuk, et al. (2019b). Most proficient participants in English mainly used monolingual dictionaries. The corrected feedback received by very high and high achievers after some low or average achiever group members' initial attempts in producing a piece of writing in English fits well with the fundamental principles of the process-oriented approach. This current study is a small-scale study, conducted with seventy-eight participants in one high school involving only one age range of 16-year-old high school EFL learners and, what is more, they were enthusiastic volunteers. All these matters restrict any generalisation of the findings to other high schools, students, or contexts. However, the insights gained were substantial for this context, and the outcome of such small-scale research we have shown can add nuanced findings to the field about how EFL teaching and learning in Turkey and similar educational contexts could be developed in a more student-centred way with more student autonomy through online-based small group CW activities.

Participants were digitally literate in terms of confidently using smartphones and laptops and, through necessity, making effective use of online dictionaries. That was especially the case with the use of their smartphones as there were no or few laptops and desktop computers in some participants' homes. All the participants could join in and benefit from the present study because they were all confident and prolific users of their smartphones. The participants in this study indicated the limited availability of laptops was potentially disadvantageous to those students if they could only use those devices, whereas using FB, given the widespread ownership of smartphones, would allow for universal participation in any such exercise. FB can be downloaded as a mobile smartphone application and thus facilitate written discussions.

It would be helpful to replicate or do similar research with students of different age groups and motivation, in different schools, in different locales to gain further insights into the use of online dictionaries to enhance the development of writing skills in EFL and, indeed, of any potential for transfer to other skills.

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Mentors' Perceptions of Supervising Student English Language Teachers During One-Year Clinical Practice

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ABSTRACT

Mentoring in initial teacher education programmes is believed to play one of the primary roles in student teachers' professional development, as it enhances the professional learning of student teachers in the context of their classroom and school experience. The purpose of the article is to explore mentors' perceptions of their readiness, expectations, and relationship with student teachers during one-year clinical teaching practice. The article defines and discusses mentoring in an initial teacher education programme at a Czech university and reports the findings of a qualitative study which was conducted in a group of mentors who provided mentoring to student English language teachers during their one-year clinical practice. The clinical teaching practice is conducted in selected schools at primary and lower-secondary levels of education and mentors, student teachers, and university teacher educators communicate and cooperate closely. The study offers insights into the mentors' perceptions of various aspects of mentoring, including the relationship of the mentors and the student English language teachers in the specific clinical practice model. The findings of the study are interpreted in the light of the proposed reform of initial teacher education in the Czech Republic and as such might be recognised by the education community and policymakers.

Keywords: teaching practice, initial teacher education, mentor, mentoring, student/pre-service English language teacher

Introduction

Mentoring plays one of the fundamental roles in student teachers' professional development, as it enhances their professional learning in the context of the classroom and school experience. However, not much is known about mentoring processes, specifically the development of the mentoring relationship (Sheridan &

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Nguyen, 2020, 296). Thus, the purpose of the article is to explore mentors' perceptions of various aspects of mentoring in terms of their readiness, expectations, and relationship with student English language teachers during one-year clinical teaching practice.

Theoretical framework

Recently, teacher education has been in a period labelled 'practice turn' (Reid, 2011). As a consequence, students in initial teacher education (ITE) are required to spend a substantial amount of time in school-based parts of the programmes. For example, acknowledging teaching as an academically taught clinical practice profession, the American Association of Colleges for Teacher Education recommends the States to require each pre-service teacher candidate to complete a full year (30 weeks or 900 hours) of clinical preparation[1] (AACTE, 2012). In Australia, pre-service teachers need to complete between 60 and 80 days of supervised professional experience (Wilson & Huynh, 2020). In New Zealand, the Teaching Council's recent revision of accreditation requirements has extended the minimum number of weeks that pre-service teachers must spend in practice settings to 16 (Hoben, 2021). Most European countries specify a minimum length of professional training, including in-school placements[2]; in some countries, however, institutions are autonomous (e.g. the Czech Republic, the Netherlands, Slovakia) or a single system does not exist (e.g. Germany, the United Kingdom) (Eurydice, 2015, pp. 32–33). In spite of the autonomy that the Czech ITE institutions possess, the structure of programmes is specified by the mandatory guidelines issued by the Ministry of Education, Youth and Sports of the Czech Republic (MŠMT, 2017). According to these guidelines, for example, the teaching practice experience and its reflection should be allocated from 24 to 30 ECTS during the whole ITE (Bachelor's and Master's programmes together), which equals about 900 hours of work.

The length of the practicum matters; however, what other constituent parts of ITE programmes there are and how they fit together are also important. Lofthouse (2018, p. 248) proposes that professional and academic elements may be interwoven and integrated through a range of curricular and programme designs. Consequently, a diversity of such designs reflecting specific socio-cultural contexts and traditions may be observed across the world.

For illustration, in England, the practice turn has led to the proliferation and diversity of ITE providers (Lofthouse, 2018). Apart from university-led or

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[1] Characteristics of effective clinical preparation are proposed, for example, by Darling-Hammond & Baratz-Snowden (2007) and by AACTE (2018).

[2] In terms of ECTS credits for in-school placements, the number ranges across European states from 15 or less (e.g. Slovenia, Estonia) to 50 (Hungary), the average being 25 (Eurydice, 2015, p. 35).

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school-led programmes (Furlong et al., 2000) utilising some kind of university-school partnership, there are also programmes which are solely school-based (*SCITT programmes, School Direct Programme*, Eurydice 2015, p. 36; Ofsted, 2017). These SCITTs decide about the academic part of the programme, i.e. whether or not to work with universities, which, according to Lofthouse (2018), has led to a withdrawal of well-established university schools of education in England from teacher education.

Given the amount of time that student teachers in ITE spend on school placements, the role of school-based mentors[3] is critical (Becher & Orland-Barak, 2018, p. 477; Hoben, 2021, p. 42; Lofthouse, 2018, p. 248) for the realisation of ITE programmes, no matter whether they are university-led, school-led, or entirely school-based. Mentoring is widely recognised as one of the most important support systems for teachers entering the profession (Hobson et al. 2009; Pinnick, 2020). To define mentoring, however, is not straightforward, since definitions of mentoring vary greatly (Ambrosetti & Dekkers, 2010) in terms of the nature of the relationship they reflect, the dimensions they cover, etc. Ambrosetti and Dekkers (2010) offer a definition of mentoring in ITE:

> *Mentoring is a non-hierarchical, reciprocal relationship between mentors and mentees who work towards specific professional and personal outcomes for the mentee. The relationship usually follows a developmental pattern within a specified timeframe and roles are defined, expectations are outlined and a purpose is (ideally) clearly delineated* (p. 52).

The definition includes all three components that embrace mentoring, i.e. relationship, process, and context.

Mentor-mentee relationship

Mentor-mentee relationships have become a key factor in the context of ITE (Wilson et al., 2020) since they determine the learning experience of mentees,[4] given its potential benefits for learning, performance, networks, and personal satisfaction (Sheridan & Nguyen, 2020). Establishing a non-hierarchical relationship has been identified by Hobson (2016) as one of seven imperative indicators of quality mentoring – its absence "makes it difficult to establish relational trust and for mentees to openly share their professional learning and development needs with mentors" (Hobson, 2016, p. 101). In addition, Wilson et al. (2020)

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[3]   A number of different words are used to refer to mentors in English (cooperating teacher, supervising teacher, etc.) and in the Czech language. With reference to Greek mythology, we prefer the word 'mentor' since Mentor meant a "father figure, an approachable counsellor, a trusted advisor, a challenger, an encourager" (Carruthers, 1993, p. 9).

[4]   Mentee = student teacher/pre-service teacher.

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argue that pre-service teachers' capacity to cope during a professional placement is closely linked to the quality of the mentoring relationship; those pre-service teachers who favour non-productive coping strategies (e.g. dwelling on the negative, self-blaming, worrying) tended to experience heightened challenges whilst on placement and reported difficult mentor-mentee communication. Similarly, Mackie (2018) proposes that the key mentoring relationship is that between the class teacher mentor and the mentee, and is essential in developing the mentee's teaching capacity. Sheridan and Nguyen (2020) explored the development of the mentor-mentee relationship during professional experience using a four-phase conceptual model of progression (Kram, 1983 in Sheridan & Nguyen, 2020), which includes:

a) initiation (the start of the relationship);
b) cultivation (mentoring functions expand);
c) separation (the established relationship is substantially altered by context and/or psychological changes), and
d) redefinition (the relationship evolves and/or ends).

The same authors conclude that the development of mentor-mentee relationships is complex and highly variable as the mentoring relationship moves between the four phases. The findings contribute to a deeper understanding of how the mentoring relationship develops and what processes contribute to supporting confident, autonomous teachers (Sheridan & Nguyen, 2020, p. 309). The development of the mentoring relationship is also determined by its length and closeness. Bentley et al. (2017) explored mentor-mentee relationships across a year-long practicum at one school and concluded that during the year, pre-service teachers were more likely to establish stronger and trusting relationships with their mentors; the mentees who felt comfortable with their mentors were more willing to take risks and utilised mistakes as valuable learning experiences. Contrary to that, Jederud et al. (2021) show how implementing a paired practicum, one of the structural changes that the practice turn has brought to Sweden, has a negative influence on the mentor-mentee relationship.

The knowledge base for mentoring

Mentors' knowledge is deeply rooted in their teaching knowledge (Becher & Orland-Barak, 2018). Their knowledge about teaching is practice-oriented and emerges from their professional experience, their teaching skills, their pre-service teacher education, and, to a considerable extent, their own personal experience (Clarke, Killeavy, & Moloney, 2013). In order to conceptualise mentor knowledge, Jones and Straker (2006) used Shulman's (1987) model of teacher knowledge and transferred four domains of teacher knowledge to a model of mentor knowledge: Content knowledge → Teacher knowledge, social, cultural, and expertise; General pedagogical knowledge → Working with adult learners;

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Pedagogical content knowledge → Professional training and development; Context knowledge → The wider and political context (Jones & Straker, 2006, p. 169).

Methods

The aim of this small-scale study is to present qualitative evidence from within the context of one-year clinical teaching practice to uncover mentors' subjective perceptions of their readiness, expectations, and relationship with student teachers in a specific ITE programme in the Czech Republic. In particular, this study explored three research questions:

1. How do the mentors perceive their readiness to work as mentors?
2. What are the mentors' expectations of their mentoring role?
3. What role does the relationship of the mentor and student teacher play in the practicum?

The design of the qualitative study was inspired by a sequential explanatory design (Creswell, 1996), as the data was collected over a period of time in two consecutive phases in the period from May to June 2022. During the first phase, a questionnaire with open-ended items was used ($n = 14$). The data in the questionnaire was drawn from the mentors who cooperated with the 2020 and 2021 cohorts of students, and 14 out of 23 mentors returned the filled in questionnaire. In the second phase, during the in-depth interviews ($n = 3$) mentors' perceptions of their mentoring roles and the development of their relationship with mentees were examined. The informant selection and data collection in the semi-structured interviews with open-ended questions were guided by the results of the questionnaire data analysis. The targeted context specific qualitative sample (Miles, Huberman, & Saldana, 2013 in Sheridan and Nguyen, 2020, p. 299) may be seen as a limitation of the study as it involves only a contextually bound small sample of participants, however, such a sample allows to collect different views of mentoring from a distinct group of mentors with different mentoring experience backgrounds and within different school settings (e.g. types of schools, sources of mentoring knowledge, teaching and mentoring experience, teachers' duties and responsibilities, their positions in schools, and types of schools).

Context

In the Czech Republic, all ITE programmes have to comply with the above-mentioned ministerial guidelines prescribing the proportions of individual components of the programme (subject matter, field didactics, teaching practice and reflection thereon, etc.). Otherwise, individual institutions make their own decisions regarding all aspects of the programme. Several changes on the system

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level are yet to come, as declared in the Strategy for the Education Policy of the Czech Republic up to 2030+ (MŠMT, 2020). One of the aims of the reforms is to maintain and cultivate the collaboration of ITE faculties and field/practice schools, especially in terms of a sufficient amount of school-based teaching practice, of reflection on school-based practice, of first-rate mentors, and adequate financial rewards for school-based mentors supervising the school-based teaching practice (MŠMT, 2022, p. 8). Currently, such a system is non-existent, as a result of which ITE providers are left to find, for example, their own ways of training mentors.

The English Language Teacher Education (ELTE) study programme at the University of Pardubice is a two-year master's degree programme which prepares teachers of English who are fully qualified to teach primary and lower-secondary learners. The way the practicum is interwoven with the academic and other professional components of the ELTE programme, as well as its length, makes it unique in the context of Czech ITE. The current programme reflects the best traditions of the programme integrating a year-long in-school placement (Píšová, 2005; Černá et al., 2017), and the understanding of teaching as an academically taught clinical profession (Alter & Coggshall, 2009).

The clinical practice itself spans the second and third semesters. The first semester, however, is a preparatory phase, during which the students are familiarised with its philosophy. Furthermore, university faculty members (tutors), together with the students, are engaged in finding and negotiating the best possible in-school placements for the students. In the second semester, students are on their placements one day a week for 13 weeks (equalling 52 hours), during which they get to know the school, observe their mentors' classes, team-teach with their mentors, teach their own lessons, and engage in other teaching-related activities. During the third semester, the school-based part of the programme is extended to three days per week, which equals 195 hours of work at school. The student teachers are involved in similar activities as in the previous semester; however, their own teaching becomes more extensive, which enables them to conduct action research.

Concerning the mentors, one group is represented by mentors who have been cooperating with the department for some time and the other comprises mentors nominated by the school leadership following previous consultations with the tutors (one mentor, one mentee). The mentors are expected to function in a range of roles across the structural, supportive, and professional dimensions of mentoring using various strategies (Yeomans & Sampson, 1994). The tutors provide the mentors with information and guidance (i.e. with mentor training reflecting the specifics of the programme) through online meetings (MS Teams), personal meetings at schools (once per term at a minimum), materials (LMS Moodle), and emails or phone calls.

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Participants

Teacher mentors for the study were recruited from thirteen schools where pre-service teachers of the ELTE programme did their teaching practice in 2020 and 2021 to provide a range of contexts (e.g. primary level of education only, primary and lower-secondary level of education only, lower- and upper-secondary level of education only) and varied in terms of their cohort of pupils and size (small – medium – large enrolments in metropolitan, urban, and rural areas). During an email survey, twenty-three mentors were approached and out of them fourteen participated in the study, all of them females. Three out of these fourteen mentors were nominated to be interviewed (via MS Teams) in the second phase of the study. Their selection was intentional and might be considered representative as the mentors who were interviewed are from different school settings and contexts, vary in their positions in schools and their duties and responsibilities, and bring diversity in their experience with, and competence in, mentoring pre-service teachers (for the mentors' demographic information see Table 1 below).

Table 1. Mentors' demographic information

Mentor	Level of education	Subjects taught	ELTE qualified (Yes/No)	Years of teaching	Interviewed (Yes/No)
M1	Primary and lower-secondary	English	Y	20	N
M2	Upper-secondary	English	Y	11	N
M3	Lower-secondary	English, Music	Y	22	N
M4	Primary	All primary subjects	Y (primary level, ELT specialization)	14	N
M5	Lower-secondary	English, Russian, German, Music	N	27	N
M6	Lower-secondary	English, Czech	N	30	Y
M7	Primary and lower-secondary	English	Y	19	N
M8	Primary and lower-secondary	English	N (finishing ELTE master's study)	3	N
M9	Primary and lower-secondary	English	Y	›20	Y
M10	Primary and lower-secondary	English	Y	11	N
M11	Primary and lower-secondary	English	Y	23	N
M12	Primary and lower-secondary	English mainly	Y	12	N
M13	Upper-secondary	English	Y	23	Y
M14	Lower-secondary	English	N	19	N

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Data collection

Qualitative data was collected in both phases of the research through open-ended items (Oppenheim, 1992). The questionnaire comprised eleven items investigating the motives of the mentors, their expectations and readiness for mentoring, ways of guiding and supporting the mentee, and mentoring time load, support from the university, and demographic information.

The questions used in the semi-structured in-depth interviews were constructed on the basis of the responses collected with the questionnaires. They were designed to establish an atmosphere of trust and rapport in order to obtain rich, detailed, and personalised information from the mentors, checking back the information provided by the individual participants and thus validating the data from the questionnaires. The interviews were recorded, transcribed verbatim, and analysed afterwards.

Data analysis

The responses from the questionnaires from the first phase were at first clustered under the individual questions and then coded using Atlas.ti. It allowed us to create codes for the categories of different mentors' perceptions "dealing with the same theme" and those were "given the same code" (Boeije, 2002, p. 397). For the interviews, the individual ones were coded at first to identify the categories of the mentors' perceptions. The researchers coded the questionnaires and interview transcripts, then discussed the results to come to an agreement to obtain internal validity of the identified coded themes revealing the mentors' perceptions of their readiness, expectations, and relationship with student teachers (Sheridan & Nguyen, 2020, 302). The themes that appeared both in the questionnaires and interviews were constantly re-examined and discussed to depict the mentors' perspectives as well as possible.

Authenticity and trustworthiness

In the research, the strategies of member checking and triangulation were used to assure the authenticity and trustworthiness of the research findings (Creswell, 2011, p. 259). The technique of member checking (Creswell, 2011, p. 259) was used to validate the findings from the questionnaires in the follow-up interview phase (see Data collection part). The data was also triangulated when using a sequential process of data collection, different methods of data collection to corroborate evidence from different mentors. The researchers worked as a pair in the phases of data collection (interviews) and data analysis (coding of the questionnaires and interviews) to assure the validity of the findings through negotiation. The respondents were familiarized with the research project, namely with its purpose, duration and procedures. All of them signed an informed, revokable consent with being involved in the project.

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Limitations

A major limitation of the study is its scope because the study is limited to the context of one ITE programme and a proposed reform in one country. Thus, the findings apply only to the context that was investigated. Another limitation may be the focus solely on the mentors' perceptions. It is desirable to complement it by exploring the mentees' point of view.

Findings and discussion

Readiness

The mentors' perceptions of their readiness can be presented on a continuum: ready to mentor – partially ready to mentor – not ready. Nevertheless, the data analysis does not reveal much variation in the mentors' perceptions. They perceive themselves as being ready, or partially ready. There appears a single negative response, which is linked to a more general negative attitude towards mentoring on the part of a particular mentor (M10) who was nominated to become a mentor by the leadership of the school without her previous consent.

The mentors perceive their readiness as being based solely on one source, mainly their teaching or mentoring experience, or they rely on multiple sources.

a) readiness based on teaching experience:

I've been teaching for many years; I think I'm well prepared to become a mentor. (M5)

Thanks to the length of my teaching experience I was hoping to be able to provide advice to my student teacher, show her important things, answer her questions, etc. (M14)

The quote illustrates the mentors' reliance on teaching experience; the mentors typically emphasise the length of their experience (many years, long-term, 30 years, etc.) rather than any other aspect (e.g. richness, quality). Teaching experience is undoubtedly an important part of the mentor's knowledge base, but, in itself, it does not make a good mentor. It is crucial that the mentors are able to make accessible their practice and the teaching principles that support it; otherwise they may fail as mentors even if they are successful practitioners who provide good role models (Corrigan & Peace, 2006, in Píšová & Duschinská, 2011, p. 80).

b) readiness based on mentoring experience:

I've been mentoring student teachers of Charles Uni for many years; I believe I ill manage it :-) (M13)

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When specifying the mentoring experience the mentors have had, they use indefinite expressions such as *some experience, several students*. In the quote above, Mentor 13 suggests the length of her experience. Some mentors rely on the experience they previously gained when mentoring student teachers in different (ITE) programmes (M13 above; M2 below), which may vary considerably in terms of their conception. Nevertheless, the transferability of the experience from one ITE context to another may be questionable. The contexts matter, and therefore reflecting the contextual differences of individual ITE programmes is crucial for mentors to be ready. Knowing the wider context is an important component of mentors' knowledge base (Jones & Straker, 2006, p. 169).

c) readiness based on mentor training:

> *In the years 2016–2019 I participated in two courses of mentoring in JOB and "Teacher as Coach" in the Libchava Academy* (M9)

Mentor 9, who does not mention her extensive teaching experience at all, is an example of a teacher who underwent some kind of mentor training, which is provided in the Czech Republic by commercial agencies or by ITE institutions that educate mentors in cooperating schools. Mentor 9 was nominated by the school leadership to participate in the commercial courses mentioned above, though at that time her school was not cooperating with any ITE institutions. Participation in some kind of mentor training is scarcely mentioned by the mentors.

Being explicitly asked about potential support, the interviewees agreed that mentor training might be helpful, but particularly for new mentors. But the opinions of Mentor 13 seem ambivalent – she suggests that mentor training would be beneficial, but she expresses her reservations regarding mandatory mentor training:

> *If you had told us at the beginning "Now you are mentors and you have to go through compulsory mentor training", I would understand it as meaning that you are trying to impose the way of doing it on me, which I would not like.* (M13 IW3)

The length of the training seems to be an issue for the mentors as well; all the interviewees would be willing to devote several hours or a maximum of one day to such training, given the demands of their workload.

The findings of this study identify a low level of involvement of the mentors in training. This is most probably caused by its limited availability because of the non-existence of a system of mentor training in the Czech Republic. This finding is consistent with the empirical studies which report a discrepancy between the requirements associated with mentor selection and training and the reality (Hoben, 2021).

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From this perspective, the tentative plans of the Ministry of Education, Youth and Sport to provide extended time for teaching practice reflection and to introduce changes in mentor remuneration, mentor training, and systematic faculty support of mentors (MŠMT, 2022, p. 8) may lead to the development of the desired competence in mentoring. In the light of the findings, however, some aspects of the plans seem to be ambitious – the mentors are willing to devote much less time (up to eight hours) to mentor training than the reform proposes. Obviously, if the reform is implemented, efforts need to be made to explain the purpose and aims of mentor training to potential mentors so that they can identify with them.

d) readiness based on student experience in ITE:

> *As I did the practicum as a student teacher, I had some ideas what it means to be a mentor. So, I was partly prepared.* (M12)

Mentor 12 felt partially prepared for mentoring since she had experienced the same ITE programme as a student. Apart from contextual differences, such an experience may be both facilitating and limiting. On the one hand, it may help to build understanding of the expectations in terms of the roles of the mentor in the ELTE programme; on the other hand, experiencing a particular model of mentoring as a mentee may be limiting. Individual mentors, however, differ in terms of their personality and knowledge base and, as a consequence, use a different repertoire of roles and strategies across the structural, supportive, and professional dimensions of mentoring (Yeomans & Sampson, 1994).

e) readiness based on multiple sources

> *I worked as a mentor in the Fulbright Commission programme for one year and in the programme, I also participated in two workshops focused on mentoring.* (M2)

> *I am certainly not a professional mentor, I have not participated in any courses or seminars, but I have some teaching and mentoring experience. (…) I also rely on my student experience…* (M1)

> *I have 30 years of experience with school education and I have mentored two student teachers already.* (M6)

Several mentors refer to multiple sources of their readiness. Mentor 2 mentions her year-long experience of mentoring a student within the Fulbright programme, which also included mentor training. Interestingly, she does not comment on her mentoring experience outside the Fulbright programme and on her teaching experience (11 years). For Mentor 1, all kinds of experience, that of teacher, mentor, and student, which is not specified in any way, contribute to her sense

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of readiness to mentor. Mentor 6 relies on her extensive teaching experience and on some mentoring experience.

To summarise, the mentors mostly perceive themselves as ready to mentor utilising their idiosyncratic resources. Being experienced, in terms of teaching and/or mentoring, is what constitutes a sense of readiness for the mentors. Thus, becoming a mentor is embedded in experiential learning. The findings suggest that mentor training is available under specific conditions, for example, participation in a project, having financial support to attend commercial courses, or cooperation with an ITE institution providing training.

Without mentor training, however, the knowledge base of mentors may appear insufficient in some dimensions, particularly "working with adult learners" and "professional training and development" (Jones & Straker, 2006, p. 169). Introducing a system of mentor training is one of the aims of the proposed reform of ITE in the Czech Republic (MŠMT, 2022), which might contribute to both ITE and the professional socialisation of novice teachers.

Expectations

The mentors formulate both positive expectations and concerns of different types.

a) positive expectations

> *I expected that the student would be interested in teaching.* (M6)

> *I knew that the mentee is competent and nice and that it would be a pleasure to collaborate with her.* (M13)

> *I know the student; I expected good collaboration.* (M3)

The mentors' student-related positive expectations stemmed from a general assumption that a student in an ITE study programme is interested in teaching (M6) or from knowing the student well prior to the practicum (M13, M3) – on the basis of knowing students, positive expectations for future collaboration are generated.

> *I expected the student teachers to be helpless ...* (M9)

Mentor 9 expected her mentees to need much more help. Interestingly, her mentees appeared to be more mature, both professionally and personally, than she expected.

> *I expected that this experience would broaden my horizons and provide insights into ITE, and perhaps it would bring enrichment in new trends and methods in ELT.* (M7)

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> *I expected that I would get some inspiration for new activities for pupils. I looked forward to collaboration and sharing experience.* (M11)

> *I would expect some new methods ... and the use of ICT in teaching ... what websites, what apps are available now.* (M6, IW1)

The expectations of Mentor 7 and Mentor 11 are associated with their own professional development. Generally, while mentoring student teachers, the two mentors expect an enriching experience; they expect to learn innovative approaches, methods, and techniques for ELT as well as to become aware of the ITE context. In addition, the expectations of Mentor 11 are connected to the interpersonal dimension of mentoring. Mentor 6 formulates her expectations, which reflect her own current specific professional needs – given the recent emphasis on the development of learners' digital competence in the Czech curriculum, she expects to learn not only new ELT methods but also to observe some innovative use of ICT in English lessons.

b) expectations coupled with concerns

> *I didn't have any great expectations, I was just curious who the student teacher would be and about his approach to learning. I was also worried a little whether I would have enough time for both teaching and mentoring.* (M1)

> *I was looking forward to cooperation with a person from the academic setting (…) At the same time, I had some worries whether I would have enough time for mentoring because of my workload.* (M12)

Mentor 1 labelled her expectations as curiosity regarding the student teacher and his approach to learning. Her positive expectations were coupled with concerns about the time, i.e. whether mentoring would be manageable together with teaching. Similarly, Mentor 12 shares the same time-related fears, while she is positive about prospective collaboration with a university student.

c) concerns

> *Maybe I was worried a little because the situation at schools (COVID, quarantine) was not ideal at all and I was considering whether we would manage the practicum online. I was also worried about the mentee's ability to learn, how much time I would spend on mentoring.* (M2)

The concerns of Mentor 2 are related not only to the specific situation (the threat of a resurgence of the COVID-19 pandemic) but to the issues already mentioned (the time needed for mentoring). Mentor 2 is well aware of all the burdens of online education during the covid-19 pandemic and, perhaps, envisaged the challenges of doing the practicum online, including the demands in terms of time.

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d) expectations not shared

Two mentors (M4, M10) claim having no expectations at all. While Mentor 10 responded *None* and left out the section of the questionnaire blank, Mentor 4 explained that it was her preventive strategy. We can only hypothesise as to their reasons for not sharing their expectations.

To sum up, the mentors express both positive expectations and some concerns about the practicum. The positive expectations, which predominate, are related to a future mentee and prospective collaboration with her/him and to the mentors' own professional development. Some mentors formulate their positive expectations about their future mentees, but, at the same time, couple them with concerns about the time needed for mentoring. Furthermore, one mentor articulates only her apprehensions which she connects with a potential online practicum because of the ongoing COVID-19 pandemic.

Surprisingly, the mentors, irrespective of whether they had some previous mentor training or not, do not mention either expectations or concerns in terms of their mentoring role. Furthermore, the findings show that the mentees, novices in the profession, are expected to stimulate the professional development of their mentors, i.e. experienced teachers.

In addition, the analysis of the mentors' expectations also discloses their reasons for becoming mentors. The interviewees suggest that financial bonuses are not the incentives motivating the teachers to become mentors; there are other driving forces, as the analysis of the mentors' expectations suggests: mission – helping the profession or the ITE institution (*It's important to help the students… to enable them to do the practicum so that they can try things out in a real school* (M6, IW1); *If I don't do it [mentor student teachers], who would?* (M13, IW3); *… being grateful, paying back for university education* (M9, IW2)), and recognition of expertise (*I have something to pass on.* (M9, IW2)). The mentors' time-related worries concern the feasibility of teaching and mentoring at the same time; the interviewees suggest that freeing mentors from other duties (e.g. substituting for absent colleagues) would be very welcome. The proposed reform intends to reflect the demands of mentoring discussed above, unfortunately; at the moment it is too early for detailed guidelines to introduce structural changes.

Mentor-mentee relationship

a) initiation – knowing the mentee

I know the student, so I expected good cooperation (M3).

… I knew that the mentee was competent and nice and that it would be a pleasure to cooperate with her … (M13).

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The relationship between the mentor and the student teacher (often knowing the student as a former pupil or knowing the student's siblings, experience of earlier collaboration with the student, etc.) appears to be a crucial determinant which influences the mentor's decision whether to engage in cooperation with the university. Furthermore, if the mentor knows the student before the practicum starts, i.e. there is already some relationship, she is likely to have positive expectations concerning future collaboration with the student teacher. Interestingly, while the mentor-mentee relationship is in the initiation phase, the former relationship is actually in the redefinition stage from teacher-pupil to mentor-mentee.

In the interview, Mentor 13 said:

> *I didn't know her [mentee T.], but both mentee K. and Professor S. spoke for her a lot* (M13, IW3).

She further explains that student teacher K. was a specific case since she was a former student of the grammar school, with strong bonds with the school. The same mentor did not know student teacher T., who came the following year and, therefore, she was reluctant to accept her. The interventions of student teacher K. and a university tutor helped.

b) initiation – not knowing the mentee

Conversely, not knowing the student teacher is a source of worries for the mentor.

> *… certainly, partly nervousness about what student will be assigned to me and whether our professional and personal selves will match up* (M8).

If the mentor does not know her prospective mentee, she tries to build a mutual relationship with the mentee from the very first moment of their cooperation:

> *We certainly talked with both, both girls, so that we got to know each other … to learn about our families a little … about what made them choose teaching as a profession, whether they really want to teach or not …* (M9, IW2)

The actions taken by Mentor 9 (i.e. initiating contact with the mentee, establishing shared goals, trust, and mutual respect) comply with the initiation stage of the development of the mentor-mentee relationship (Sheridan & Nguyen, 2020).

c) cultivation of the relationship

When being interviewed, Mentor 9 and Mentor 6 described the development of the mentor-mentee relationship:

> *… with the mentee I think …when we were meeting more frequently it [the relationship] was getting more and more friendly …* (M6, IW1)

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> *At first you really see the mentee: 'well, a student came to do the practicum' and then it [the relationship] changes, say, alters, transforms into a collegial relationship…suddenly I forget that she is a student teacher, she is a real colleague* (M9, IW2)

Mentor 6 exemplifies how the frequency of contact contributes to the development of the relationship to the cultivation phase (Sheridan & Nguyen, 2020). Moreover, Mentor 9 suggests how the relationship is no longer hierarchical, but becomes reciprocal, collegiate, and in fact is redefined from one of mentor-mentee to one of colleague-colleague. Ambrosetti and Dekkers (2010) argue that in the context of ITE, the relationship follows a developmental pattern within a specified timeframe, which is two semesters in this study. With reference to Bentley et al. (2017), it may be concluded that the length of the practicum in the ELTE study programme at the University of Pardubice is conducive to the development of the mentor-mentee relationship. Moreover, the one mentor-one mentee format of the practicum is also favourable regarding the development of the relationship, unlike the paired format (one mentor with two mentees), which changes the relational dynamics (Jederud et al., 2021). If viewed from the perspective of the proposed reform of ITE in the Czech Republic, the intentions to introduce the paired format of the practicum may impact considerably on the development of the mentor-mentee relationship.

Conclusions

The aim of the study was to investigate mentors' perceptions of their readiness, expectations, and relationships with student teachers during the ELTE one-year teaching practice. The findings of the study are interpreted in the light of the proposed ITE reform in the Czech Republic. We may conclude that introducing structural changes (the length of the practicum, the system of mentoring and mentor training, the faculty and other support for mentors) may bring the expected benefits at the system level. However, there are partial aspects of the reform, namely at the individual level, which need to be reconsidered. They concern the mentor-mentee relationship, which stands at the centre of mentoring. It appears that a former teacher-pupil relationship accelerates, or even enables, initiation and cultivation of the mentor-mentee relationship. From the mentors' perspective, it is professional ethics that urges teachers to engage in mentoring student teachers and, thus, accept shared responsibility for ITE. Also, from the students' perspective, their freedom to nomination of a school/mentor may be beneficial. Having free will to enter the mentor-mentee relationship is significant, though this approach is criticised by the reform, which intends to centralise in-school placements in a lower number of institutions implementing the paired

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format of the practicum. However, the mentor-mentee relationship is one that it is difficult or even impossible to develop in the proposed paired practicum format.

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Focusing on Arts Education from the Perspectives of Well-Being

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ABSTRACT

The place of well-being has been the focus of arts pedagogy and research and practice of lifelong learning for some time. This is because arts education itself is seen as a challenge today, as it is included in performance-oriented curricula. They are based on the contradiction between organizing and maintaining high-quality learning experiences and achievements through a well-being perspective. Within the framework of this research, one of the sub-branches of art pedagogy – dance pedagogy – has been studied. Dance pedagogy has been chosen because, firstly, it still has implications of authoritarian pedagogy in its particular cultural environment, and secondly, dance pedagogy as a component of quality of life and healthy ageing in the context of lifelong learning is beginning to significantly strengthen its place. The purpose of this publication is to identify the components of well-being formation in an adult dance class from the teacher's point of view. This choice of focus was determined by the results of the previous research stage, where one of the criteria of well-being was identified in the dancers' interviews: the personality and professional mastery of the teacher, as well as the still current idea that the vital aspect of art pedagogy is how the teacher conceptualizes the pedagogical process. The respondents were selected during the nomination process, i.e., the candidates were nominated by the dancers and industry professionals themselves. Data were analysed using the qualitative data processing program NVivo 12.0. As a result, the dance teachers' vision of the pedagogical process was identified, which promotes the dancer's well-being, where the following criteria are established as an essential part of the pedagogical process: the student's personality understanding, involvement and preparedness, and psychological knowledge. The results of this research will serve as a basis for the creation of a professional development program for art teachers.

Keywords: art pedagogy, dance pedagogy, lifelong learning, NVivo, well-being

Introduction

Nowadays, the idea of improving one's quality of life through the offered lifelong learning opportunities, which allows to promote well-being both in a social context and by improving one's personality, maintains its relevance. This discussion becomes especially relevant in the context of the consumer society, since consumption is positioned as a space of experience, both present and surrounded by the modern person, in which he forms his own attitudes towards himself, others and the world (Medne et al., 2018). Most people take a proactive approach to healthy lifestyle; the global pandemic has increased attention to the latest health and wellness trends, in the context of which the cult of the body and a healthy lifestyle often exhibit an unhealthy interpretation. Therefore, in exhibiting well-being, it is important to be aware of the possibility that well-being, becoming a topical subject, involves the risk of becoming a commodity (Manchanda, 2017). Well-being is a sustainable condition that allows a person to live and develop qualitatively. Therefore, in many sectors, well-being in theoretical concepts becomes the subject of research (Zīsberga, 2022).

The place of well-being has also been the focus of arts pedagogy and research and practice of lifelong learning for some time. This is because art education itself is nowadays seen as a challenge, as it is looked after by Performance-Orientated curricula. Challenges are based on the contradiction between high-quality learning experiences and the organisation and maintenance of achievements through a well-being perspective. It is emphasized that the time has come to move beyond the perspective of defining quality, which focuses on policies that create the conditions for high-quality arts programmes, instead of using the perspective of experience, which focuses on the learning experience of students. This change of focus prioritizes student learning as the essence — the compass and measure of each art learning experience (Seidel et al., 2009).

Regular physical activity is important at all ages for people who want to promote their well-being. Within the framework of this research, one of the sub-branches of art pedagogy – dance pedagogy – has been studied. Csikszentmihalyi (1978) has already emphasized that artistic activities and experience in them are important for phylogenetic and ontogenetic development. Even nowadays, it is more often emphasized that self-expression is topical throughout life, and dance classes for adults are one of the possibilities of self-fulfilment (York-Pryce, 2014). Arts pedagogy increasingly emphasizes not only the level of abilities and skills, but also the importance of processes that occur mentally (Muceniece et al., 2021. Within the framework of this research, dance pedagogy has been chosen because, firstly, it still has implications of authoritarian pedagogy in the particular cultural environment (Latvia), and secondly, dance pedagogy as a component of quality life and healthy ageing in the context of lifelong learning is beginning to significantly strengthen its place. The purpose

of this publication is to identify the components of well-being formation in an adult dance class from the teacher's point of view. Such a choice of focus was determined by the results of the previous research stage (Zīsberga, 2022), where one of the criteria of well-being was identified in the dancers' interviews: the personality and professional mastery of the teacher, as well as the still current idea that the vital aspect of art pedagogy is how the teacher conceptualizes the pedagogical process. At this stage of the research, it was concluded that a dance teacher is an essential component in promoting dancers' well-being. However, scientific research highlights that the relationship between students and teachers in adult education has not been sufficiently studied (Hagenauer & Volet, 2014). The study of teachers' vision was chosen because it is considered a powerful tool for understanding teachers' work experience (Hammerness, 2004). The vision can serve as a guide for managing pedagogical practice, as well as means of assessing how far teachers can deviate from their ideals. Exploring it can help explain what assumptions teachers make; what they know about their assumptions; the pretexts why and how they can choose to change their practice; and even whether or not they choose to remain in the profession. It is a powerful tool to help teachers discover and identify their views and new approaches to promising new practices (Hammerness, 2001). In the context of higher education, it is emphasized that teachers have a great potential to promote students' emotional well-being by using learning innovations and consciously creating the learning environment (Baik et al., 2017). Based on the findings that the teacher's personality and professional mastery, as well as the current idea that a vital aspect in art pedagogy is how the teacher sees the pedagogical process (Siddins, 2021; Medne & Jansone-Ratinika, 2019), the perspective of the teacher was determined as the focus of the further research. The aim of this study was to identify how dance teachers themselves interpret the pedagogical focus of the dance class.

Methodology

To achieve the aim of the research, phenomenological research design was chosen, because phenomenology investigates the nature of experience, revealing how complex meaning or networks of meanings are formed from simple units of direct experiences. The main objective of such research is to reduce individual experience to a description of its universal nature – within the framework of this research: the content scope of the teacher's vision.

Sample. The type of sample chosen to achieve the objective of the study: purposive sampling (Cohen et al., 2007). The research sample consisted of 10 respondents – experts; the sample was selected during the nomination process, namely, the candidates were nominated by students and industry professionals.

Each expert was contacted individually by telephone. The nominated experts represented the following dance styles: classical dance ($n = 6$) and contemporary dance ($n = 4$). Work experience in both groups: 15–20 years ($n = 5$); 21–25 years ($n = 1$); 26–30 years ($n = 2$); 31–35 years ($n = 1$); 36–40 years ($n = 1$); 41–45 years ($n = 1$).

Research ethics. The study was conducted in accordance with the ethical aspects of the research, and consent was obtained from the experts. At the beginning of the interviews, the interviewer provided information about the study, inviting participants to participate in the study on a voluntary basis. Study participants were informed that they were entitled to stop participating in the study at any time. During the interviews, information that could allow the identification of respondents was not asked, the interviews were coded and then transcribed anonymously. After transcribing, the audio files of the interviews were deleted.

Data analysis and synthesis were performed according to the type of narrative synthesis, which included three consecutive steps:
1) defined logical categories,
2) analysed data from each obtained category,
3) synthesized questions about all included logical categories (Petticrew & Roberts, 2006).

Results

Inductive coding (identification of topics and contexts by assigning code to the relevant passage of text) was used to identify the vision of teachers. During inductive coding, 25 codes were identified and defined: *support* (identified in all interviews, 114 times in total); *feedback* (identified in 9 out of 10 interviews, 63 times in total); *relationship* (identified in all interviews, 151 times in total); *emotional intelligence* (identified in all interviews, 115 times in total); *humour* (identified in all interviews, 43 times in total); *encouragement* (identified in all interviews, 78 times in total); *individual approach* (identified in all interviews, 200 times in total); *student's individual success* (identified in 9 out of 10 interviews, 61 times in total); *interest* (identified in all interviews, 56 times in total); *competence* (identified in all interviews, 202 times in total); *communication* (identified in 9 out of 10 interviews, 182 times in total); *balancing* (identified in all interviews, 131 times in total); *teacher's activity* (identified in all interviews, 77 times in total); *teacher's involvement* (identified in all interviews, 199 times in total); *teacher's personality* (identified in all interviews, 139 times in total); *experience* (identified in all interviews, 99 times in total); *positivity* (identified in all interviews, 159 times in total); *knowledge of psychology* (identified in 9 out of 10 interviews, 69 times in total); *result* (identified in all interviews, 175 times in

total); *optimal use of one's resources (consciously)* (identified in 9 out of 10 interviews, 33 times in total); *use of one's resources (unconsciously)* (identified in 8 out of 10 interviews, 13 times in total); *self-awareness* (identified in all interviews, 103 times in total); *ability to overcome difficulties* (identified in all interviews, 91 times in total); *trust in the student* (identified in all interviews, 37 times in total); *knowledge* (identified in all interviews, 95 times in total).

The results of the code frequencies obtained in the study show that the interviews broadly and in detail describe the aspects characterizing the relationship, individual approach, the competence of the teacher, the results, the involvement of the teacher, positivity, and communication. Certain codes, such as trust in the student, optimal use of one's resources, humour, are used less frequently. This can be explained by the intention of the authors of the study to use as many different codes as possible at the beginning of the analysis in order to describe the different indicators of teacher's vision in more detail and breadth. Therefore, in the initial phase, the most complete list of open codes was developed, covering the entire range of topics described in the publications. At a later stage of coding, they were combined in meaningful broader codes, because the program NVivo allows you to group meaningful similar codes into hierarchical codes. In other words, inductive coding was followed by hierarchical coding, which was necessary in order to combine codes related in meaning. Therefore, the program analysed the code ranges (according to the codes) using Jaccard's coefficient. As a result, the relationship between the open and hierarchical codes linked to each other was obtained and three hierarchical codes were identified.

By summarizing the codes identified by each expert in the interviews, the consistency of the expert opinions was examined using the Kendall concordance coefficient (with the Kendall W (tau_c) test in the SPSS Statistics Trial program). The coefficient shall reflect how similar the peers have used each code and how close the peer reviews are to each other (code frequency for interviews). If there is a high degree of convergence of views, then it can be considered that all experts have accentuated each code equally frequently and that their overall assessment is close to the true one (Legendre, 2010). The concordance coefficient ranges from 0 to 1, so closer it is to one, the greater the coherence between expert opinions. It can be concluded that the opinions of the experts of this study in all code interpolations range from 0.699 (code *teacher's involvement*) to 0.989 (code *positivity*), so all the codes are close to 1 and thus should be interpreted so that there is a correlation between the expert assessments for all the codes. The relationship between open and hierarchical codes and the concordance coefficient for each code are shown in Table 1.

Table 1. Hierarchical and open codes identified in interviews

Hierarchical codes	Subcodes	Number of interviews	Number of codes	Kendall's W (tau_c) test
Student's self-efficacy	Support	10	114	0.786
	Encouragement	10	78	0.816
	Individual approach	10	200	0.781
	Individual success (student's)	9	61	0.831
	Interest	10	56	0.921
	Balancing	10	131	0.887
	Result	10	175	0.797
	Optimal use of one's resources	9	33	0.891
	Ability to overcome difficulties	10	91	0.883
	Trust in the student	10	37	0.795
Personal self-efficacy	Emotional intelligence	10	115	0.858
	Humour	10	43	0.879
	Competence	10	202	0.799
	Teacher's personality	10	139	0.891
	Experience	10	99	0.865
	Positivity	10	159	0.989
	Knowledge of psychology	9	69	0.901
	Use of one's resources	8	13	0.799
	Self-awareness	10	103	0.889
	Knowledge	10	95	0.901
Cooperation	Feedback	9	63	0.779
	Relationship	10	151	0.859
	Communication	9	182	0.897
	Teacher's activity	10	77	0.799
	Teacher's involvement	10	199	0.699

To determine the content framework for the teacher's vision, an action was performed in the programme that allows you to determine the distribution and succession of the most common code interrelationships. The program set up a scheme reflecting interrelationships in thematic blocks, the order of which is in accordance with their interdependencies. The results refer to the three blocks of code interrelationships, where the order of the codes indicates their relationship, as well as the subordination between them and the succession. When analysing the interrelationship of codes in each of the three blocks, the subject of their content was initially formulated as the personal effectiveness of the teacher and the effectiveness of the student, however, continuing with the analysis it leads to the conclusion that the content of each block corresponds to the explanation of the concept of self-efficacy of Bandura (1995), namely, self-efficacy influences

what a person chooses to do, how much effort is made to achieve it, how persistent he is in facing difficulties, how complex the objectives are, therefore the code blocks are redefined as the teacher's self-efficacy, students' self-efficacy and cooperation.

The obtained results indicate the three blocks of code interrelationships: teacher's self-efficacy, student's self-efficacy and cooperation, which also coincides with the results of the cluster analysis results. **The Teacher's Self-Efficacy Block** consists of two sub-code blocks: *Competence* and *Positivity*, where *Competence* is related to the codes *Teacher's personality* and *Emotional intelligence*. Code *Positivity* is associated with codes *Emotional intelligence* and *Self-awareness*. Code *Teacher's personality* is related to codes *Experience* and *Knowledge* (as equally significant for symmetric sizes). On the other hand, code *Emotional intelligence* creates connections with codes *Experience* and *Knowledge, Knowledge of psychology* and *Humour*. Code *Self-awareness* is linked to code *Emotional intelligence, Knowledge of psychology*, which in turn is linked to codes *Humour* and *Optimal use of one's resources*. Analysing the results obtained, it can be explained that teachers, using professional competence in their work, promote positivity in dance classes, which respondent S formulates as follows: *you have to be kind and positive to all those people, if they have come to you, because they want to come to you and do it*, and respondent L describes it as follows: *I really care what happens to those people. I always say, if you go out of the dance class more satisfied, happier or have discovered something, then I've done my job*. The results allow to conclude that the relationship of the teacher's personality code with the codes *Competence, Positivity, Emotional intelligence* and *Experience* is identifiable. In order for positivity to be formed in dance classes, experts emphasize the importance of emotional intelligence, because for each person positivity is formed as a result of subjective perception, and the teacher's ability to perceive this set of subjective needs is a direct manifestation of emotional intelligence, through which, using professional competence, appropriate tools are sought to work productively with students. Respondent S describes it as follows: *there is very, very nuanced work to be done there,* while Respondent Z describes it as follows: *You have to feel it very delicately. It's such an extremely subtle thing,* but the respondent O describes it like this: *because we read people more, instantaneously, because we speak on a different level.* The code *Experience* and the code *Knowledge* are also clearly interrelated. Experts emphasize that it is the experience that determines the choice of the type and method of knowledge application in specific situations, which respondent Z describes as follows: *absolutely technical knowledge and know things. Know the subject.* In turn, respondent B describes it as*: that's my path of knowledge, as far as I can, let's say, come up with more. How else to explain, how else to show it so that they would, let's say, understand.* The code *Humour* was used by respondents individually, according to their pedagogical vision and their personality, but the results

show the relationship with the codes *Optimal use of one's resources, Knowledge of psychology and Knowledge.* It can be concluded that humour is often used as an instrument within the framework of professional competence, which promotes both the creation of a social atmosphere and the development of positivity, as an instrument for overcoming difficulties, and as a communication tool, which respondent R characterizes as *very important. I think it's easy to teach. Not to make the heavy load even heavier. It's this sense of humour that helps,* while respondent X describes it as: *of the people who come, they say they like that kind of humour,* but respondent G emphasises that: *it somehow attracts, it's a personality with a sense of humour, it attracts, it encourages, it creates that positive field around that teacher.* Code *Knowledge of psychology*, is related to codes *Self-awareness*, *Optimal use of one's resources, Experience,* which could be explained that in pedagogical work with the student the professional assessment of the student's resources is essential, and using experience and knowledge of psychology as a working tool, often using humour, it is possible to promote positivity, which respondent R describes as follows: *The smallest thing you see, then you have to say, then you have to praise, and so, that person, first of all, he feels appreciated, noticed, and gradually he collects, let's say his own set of strong sides, which he might also be aware of,* and the respondent S emphasizes this as follows: *I have always said that the teacher should be more of a psychologist than a teacher, the psychological thought is the main thing for us. Because the subconscious is working for you all the time,* while the respondent L emphasizes it as follows: *essentially, through dancing, I want to bring a person closer to himself. Let him understand who he is, and so if you understand what you're doing in dancing, you can dance well.*

The student's self-efficacy block consists of two subcode blocks: *individual approach* and *result*. Code *Individual approach* is linked to code *Balancing*, which is linked to two codes: code *Ability to overcome difficulties* and code *Individual success*. Code *Ability to overcome difficulties* is linked to code *Encouragement*. Code *Individual success* is linked to code *Trust in the student*. Code *Result* is linked to code *Support* which is linked to codes *Individual success* and *Interest*. Code *Interest* is linked to code *Trust in the student*. In turn, code *Interest* is linked to code *Use of one's resources*. The results obtained can be explained that balancing is an essential pedagogical tool that can effectively achieve results and goals. It is important to realize that students set most of the goals according to their individual subjective vision of life, according to which an individual approach is required, which is also repeatedly emphasized by the experts in the interviews, for example, the respondent O describes it as follows: *individual work with him. And then we see the result. In ballet, unfortunately, in ballet school, it can't, it's not, I, I really, I've been talking about it for twenty years. (We) need to change the system if we want to raise stars. If we want to raise Corps de ballet, then nothing needs to change,* or for example, respondent G describes it as follows: *in my opinion, (it's) individual work,*

really, understanding. I see the questions for the specific person there again, and then, applying, from the answers I hear, I can again understand how I act, how I speak, what tasks I give him, but the respondent L describes it as follows: *all dance teachers are probably also therapists, and we work one-on-one,* but respondent S emphasizes it as follows: *how much everyone wants it, whether he wants it for himself, whether he wants to know (the subject) more deeply or... I look and try, I try to approach each one individually.* Also visible is the code *Balancing* relation with codes *Ability to overcome difficulties* and *Support,* which could be explained by the previously analysed theory of individual dynamic balance of well-being content, which is based on the opinion that in order to regain balance (homeostasis), a person has to match his/her resources with a challenge, and the teacher is this balancing factor, which, with his/her support and encouragement, promotes the ability to overcome difficulties and challenges, which in turn contributes to the student's achievement, development and growth, which the respondent S defined as follows: *everything depends on the thinking how deeply he/she approaches the process. Those who enter superficially will not want to change anything either. But person who goes deeper, he's ready for various changes,* but the respondent R describes it as follows, also highlighting the risk of burnout in the work of the teacher: *with such kind of human attention. And there, too, care must be taken so that the same teacher does not leave with them. Because it's not easy either. Raise your energy, understand your competence frameworks, somehow and don't take on more than you are capable of.* In order to successfully balance the pedagogical process, experts, as one of the approaches, choose an individual approach that logically provides cooperation between the teacher and the student, therefore, when analysing the relationship between the codes, a third thematic block of codes was logically formed: **Cooperation**, which is linked to both other thematic blocks: *Teacher's self-efficacy* and *Student's self-efficacy.* Code block *Teacher's self-efficacy* is linked to code *Teacher's engagement* and *Communication,* where code *Communication* is linked to code *Relationship.* In turn, code block **Student's self-efficacy** is linked to codes *Communication, Relationships, Teacher's activity* and *Feedback.* When explaining the obtained results, one can see the central role of communication in the ability of the teacher to form a relationship with the student, the intensity of this relationship is formed from the level of teacher's involvement, as well as the formation of feedback. Experts choose communication as a tool to balance the process, to promote the formation of well-being, which respondent I explains as follows: *also to say how, let's say, what is the goal you want to achieve, and then if they say, well, in order to achieve it, then you have to do this and that,* or respondent X explains as follows: *with communication I can help, it works* or respondent S describes it as follows: *to show visually what it looks like, then to try to talk it over with him, see we will have to work more on this, less on that,* as well as to be able to adapt the pedagogical work as effectively as possible for each student individually, which

respondent L explains as follows: *either they have different goals and we try to talk about those goals, I ask them questions*, or respondent R describes it as follows: *it always allows you to go in some depth, and also to communicate much more in such intangible categories, which are those human things, which is all this mutual chemistry here*. Code *Communication* links previously analysed code blocks, and interacts with the largest amount of codes in the obtained results.

The program performed code mapping to triangulate the results. The mapping was done by aligning each hierarchical code to its subcodes. Choosing this mapping type shows the relationship between hierarchical codes and classifiers, as well as the relationship between subcodes. The mapping results lead to the conclusion that the hierarchical codes and subcodes are interrelated and can be used to identify and monitor the vision of the teacher. However, its further use would require verification of internal coherence and reliability on a statistical basis.

Discussion

After evaluating the results of the research, it can be concluded that in the dance class for adult students the well-being is formed as a direct and purpose-fully directed action of the teacher, which is determined by the vision of the teacher. The pedagogical approach defined in the teacher's competence is used in the dance class as a tool to balance student's resources and overcome challenges. Thus, it can be assumed that the teacher is the balancing component in the student's individual resource – challenge – dynamic balance system. The pedagogical activity of the teacher is the balancing component of the student's resources and challenges, which, with support and encouragement, contributes to the student's ability to overcome difficulties and challenges, which in turn contributes to the achievement of the student's goals, development, and growth. Thus, the basic relationship: the vision of the teacher – the student's well-being in its current, general and individual scope – can be seen as an interaction between challenges and resources for both the teacher and the students. Thus, a dance class in the context of lifelong learning can be seen as both a space for experience and an opportunity.

In turn, the cooperation between the student and the teacher is both a peda-gogical background and a pedagogical technique that promotes the development of the students' well-being in the dance class.

The teacher's self-efficacy is directly related to his/her pedagogical vision and the use of individual pedagogical tools. These conclusions are consistent with the results of other studies, which conclude that the pedagogical mastery of the teacher is what determines both the well-being and professional development of the students (Medne, 2022).

Conclusions

This study looks at the vision of dance teachers in the context of lifelong learning as a means of research based on art. The aim of the study was to identify the pedagogical techniques of experts identified during the nomination process that contribute to the well-being of students. The study analysed 10 interviews and identified 25 codes: support, feedback, relationships, emotional intelligence, humour, encouragement, individual approach, student's individual success, interest, competence, communication, balancing, teacher's activity, teacher's personality, experience, positivity, knowledge of psychology, result, optimal use of one's resources, self-awareness, ability to overcome difficulties, trust in the student, knowledge. Three thematic circles were identified in the interviews:

1) it is the social and professional role of the teacher that is leading the construction of the student's well-being and acts as the organizer and promoter of this construction,
2) the knowledge of psychology is identified as an essential resource, and
3) the professional vision of the teacher determines his/her pedagogical approach.

This research was carried out in the dance teacher population of Latvia, common topics were identified in the interviews and coherence of views was established, however, it would not be correct to generalize the results of this research to the wider dance teacher community. Thus, the secondary discussion of the research is more about the identification of teaching methods to promote the well-being of students than the repetition of specific discoveries.

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Rubrics as a Tool for Objective Assessment in Art Education

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ABSTRACT

The paper describes the importance of a rubric as an assessment tool in art education. The assessment of a work of art, for example, a landscape or a portrait painting usually consists of a combination of objective information and a subjective point of view, which makes it difficult for educators to assess students' learning outcomes. The use of rubrics is considered an innovative way for educators not only to measure the student's comprehension and skills but also as a teaching method to increase learners' engagement in order to bring the creation of art to the forefront of the learning process within school art education.

The relevance of the subject of this paper is defined by the changes in the evaluation system during the ongoing education reform in Latvia. The rubric, as an assessment tool in Latvia, was first introduced in 2020 as a part of the reform of the school curriculum. Rubrics for creative art assignments observe the main stages of the learning process, including sketching, expression of original ideas, creative work, documentation of the creation process and self-evaluation. It can be used for both, summative and formative assessments of learning outcomes. The criteria are based on the Common European Framework of Reference for Visual Literacy which was developed by The European Network of Visual Literacy. Therefore, the research aim is to determine the optimal way to evaluate students' work in art lessons within the framework of school art education.

The research involved two stages of data collection. During the first stage (2021) there was conducted a survey of 60 Latvian secondary school teachers that identified several problematic issues concerning the evaluation criteria. In the second stage (2022) the in-depth analysis was performed to investigate the connection between the feedback from educational practice and recommended rubrics in new curricula.

Keywords: art education, assessment, formal education, rubric, analytical rubric, learning process

Introduction

For several years now, large-scale reforms of curricula, instruction design and assessment system have been carried out around the world in order to prepare the children most efficiently for the higher education, requirements of life and work in the 21st century (Darling-Hammond, 2012). By rethinking the role of assessment in the learning process, student assessment has gained new meaning and importance. Current educational guidelines state that assessment is done not only by the teacher, but also by the students themselves. Students use assessment criteria to improve learning, set learning goals and track their performance. In this way, they are aware of their level of skills and knowledge precisely because they are informed of how the judgments about their learning outcomes are made (Gardner et al., 2014). The curriculum was also revised in Latvia, at all levels of education, implementing a competency-based approach. Thus, the questions are rising about the assessment practice and its role in the learning process in all school subjects, including art education.

Due to the educational reform implemented in Latvia, two types of assessment are used in the current school evaluation system: formative and summative. The formative assessment is used to assess student performance on a daily basis, and it can be documented in percentage or levels, while a 10-point scale is used for final or summative assessment starting from the third grade. Both types of assessment are implemented together in correlation with the student achievement at four levels (beginning, developing, accomplished, exemplary), which are defined by specific learning objectives in each subject. In order to determine the achievements of students by level, the rubric as an evaluation tool was introduced in Latvia for the first time in 2020 as part of the school curriculum reform.

Therefore, the purpose of this research is to determine the optimal way to assess students' work in art lessons within the framework of school art education. In accordance with the aim of the study, two research questions have arisen:
1) How to evaluate art in formal education?
2) Are teachers receiving sufficient support to understand and acquire the necessary skills to master the use of the new assessment tool?

Problematics of art assessment within the framework of school education

"Art is eccentric, emotional, touchy-feely. Assessment is mainstream, scientific, rigorous." (Soep, 2005, p. 39). This observation was relevant around a decade ago and remains relevant today (Soep, 2005; Douglas, 2012; Burnard, 2011; McArdle & Wright, 2014), and it accurately describes why evaluating a study work of art is quite a difficult task. Teachers are still confronted with the fact that the mastery in the arts within the framework of school education is not easy to assess, as for too many teachers art and assessment may seem contradictory as "the first is free and expressive, while the second is calculating and institutionalized" (Soep, 2005, p. 40).

The difficulties to assess students' work in art lessons may be as follows:

1) the evaluation of a work of art usually consists of a combination of objective information, such as mastery of a particular technique and the number of sketches required, as well as more subjective information, such as points of view or perceptions of originality (McArdle & Wright, 2014);

2) each student makes his personal creative path, develops and performs in different ways (Hobdell, 2014);

3) there are opinions that too strict criteria and focus on evaluation can negatively affect the student's creative work, interrupt self-expression and experience of his personal creative process (Douglas, 2012).

Although expression in art is difficult to measure and evaluate, assessment plays an important role in the learning process. It could be used to communicate what is expected of a particular learning experience, so that the learner has clear information about the aims and outcomes of the learning process and understands how their achievement will be assessed (Gardner et al., 2014). Furthermore, the school education system determines the need to monitor and evaluate students' knowledge and skills in all subjects, so it is necessary to find an objective way to evaluate students' achievements in art curricula as well (Douglas, 2012). And the evaluation strategy must be designed so that every student, teacher and school administration can be confident about the validity of the results, teacher must be able to explain and justify his opinion about the students' achievements (Black & Wiliam, 2012; Binkley et al., 2012; Hoge & Butcher, 2014).

Rubric as an assessment tool

The rubric as an assessment tool in pedagogical practice was introduced in a language classroom to analyse writing in 1912 (Brooks, 2013). It is defined as "a scoring tool for qualitative rating of authentic or complex student work." (Jonsson & Svingby, 2007, p. 131), which also corresponds to the work of students in art classes, the focus of which is on the development of students' creative abilities, their originality and innovative thinking (Burnard, 2011).

The rubric was created to reduce the teacher's personal, subjective opinion when evaluating the student's achievements. The subjective view on the quality of the students' work made the assessment unclear and imprecise, as it depended on the opinion of a specific individual (teacher). For this reason, the need of an objective evaluation tool was expressed, which would be unambiguous, transparent, and clear to all involved in the learning process and would not depend on the opinion of one individual (Noyes, 1912 in Turley & Gallagher, 2008).

Rubric splits a task into its components and goals and gives a detailed description of the acceptable and unacceptable level of performance for each criterion (Stevens & Levi, 2005). It helps to assess the quality, creativity, and conceptual basis of the work, defines what is expected, how it will be assessed, and provides

an overview of the criteria that determine whether the required level of knowledge and skills has been achieved (Whitton, 2015). There are two main types of rubrics for evaluating the final product (Luft, 1997; Whitton, 2015):

1) holistic rubric evaluates several criteria together;
2) analytical rubric evaluates the criteria, which are subdivided into sub-criteria, providing detailed information and guidance to the student and teacher on how to develop the necessary knowledge and skills.

Analytical type assessment rubric is considered in current research because this type of rubric was introduced as an assessment tool in Latvia as part of the school curriculum reform in 2020.

Methodology

In order to investigate the problematic issues outlined in introduction part about the art assessment within the framework of school education, two following research methods were used:

1) an online questionnaire surveys of Latvian secondary school teachers, which was conducted in two stages;
2) participants' observation during the teacher professional development program "Evaluation of Creative Works in the Art in School Education".

Each online questionnaire survey was designed with its own purpose and included a different set of questions. In the first stage, the purpose of the survey was to determine the situation at the initial stage of the implementation of the reform ideas, when teachers were introduced to the evaluation rubric as a new tool for evaluating student achievements. The survey was conducted in 2021, where 60 teachers took part in, who participated in education courses organized by the Latvian State Education Centre in 2021 received an individual e-mail with an invitation to participate in a survey about the experience of teaching visual arts and the evaluation process in elementary school. The purpose of this questionnaire was to understand the opinion of Latvian school teachers towards the evaluation of works of art. The questionnaire consisted of 18 questions, which were divided into three groups: the first part was about the structure of the learning process (number of assessments and topics); the second part of the questionnaire contained questions about the principles of evaluation and student involvement in the formulation of criteria, and in the third part, teachers had the opportunity to freely express ideas and suggestions for the evaluation of creative works.

Further, during the second stage of the survey in 2022, an in-depth analysis of the problematic issues of assessment was conducted, where 77 teachers participated. Teachers were approached in two ways:

1) individually via e-mail with a request to participate in the study and fill out the survey;

2) in the social network *Facebook*, addressing Latvian school teachers to participate in the study.

As a result, 54 completed questionnaires were received from the individually addressed teachers, while 23 questionnaires were received from the *Facebook* community of teachers. The purpose of this questionnaire was to examine the experience of teachers in using the assessment rubric and to identify the challenges teachers faced in implementing the new assessment tool in art classes. Therefore, the survey questions were focused directly on the rubric, the criteria of the rubric and the objectivity of the assessment. The questionnaire consisted of 17 closed-ended questions, which were divided into two groups:

1) the first part consisted of general questions about teachers' work experience as visual art teachers, and assessment practices in everyday classroom work;
2) the second part of the questionnaire contained questions about the use of rubric as an assessment tool while evaluating students' works.

After the seconds survey in 2022, the participant observation was conducted during the Teacher professional development program "Evaluation of Creative Works in the Art in School Education" in August 2022. The purpose of the program was to improve teachers› skills to plan an effective creative process and to evaluate students› works of art according to the specifics of the subject. The total duration of the program was 36 hours with participation of 25 teachers of visual arts from general and professional schools. In this stage of the research, the experience of teachers in applying the rubric as an assessment tool, as well as a teaching and learning method, was described by collecting teachers' statements and insights from three phases of training: firstly, during the open discussion in the introductory part, secondly, in the rubric creation workshop and finally in the reflection part at the end of the courses. Thus, the purpose of the participant observation was to get acquainted with the skills of teachers in creating a rubric and to identify the main problems that teachers face in this process.

Results

The results of each stage of the study are described in a separate subsection, to facilitate a better overview of the progress of the study and highlight the most important key considerations.

The first-round questionnaire

A brief survey was conducted in 2021, to acknowledge the attitude of Latvian school teachers towards the evaluation of study works of art. It was completed by 60 visual arts teachers. The selection of teachers for this survey can be considered

an expert survey because structurally they were teachers with more than 10 years of experience as visual arts teachers (70%), who received professional education at the Faculty of Pedagogy, Psychology and Art of the Republic of Latvia. University of Latvia (65%) and Latvian Academy of Arts (20%). The survey was anonymous.

In the first part of the questionnaire, 65% of respondents stated that they give 2 to 4 summative assessments per semester, 30% give 5 to 6 assessments and 5% noted that they give 7 assessments per semester, performing both finished work and half-finished work and also sketch evaluation, depending on the situation.

In the second part of the survey, it can be concluded that out of 60 teachers, only 22 participate in the evaluation process together with the students, which indicates a procedural problem, such as lack of time. 8 teachers indicate that they give the assessment individually in a conversation with each student, and 6 that they give the assessment only in written form. When commenting on the importance of evaluations, answers about the assessment of skills dominate (mentioned 48 times), and the level of creativity is almost equally important (mentioned 44 times). This means that the findings of the theory fixed at the beginning of the article will be confirmed. It is also possible to evaluate personal effort (mentioned 34 times), process quality (mentioned 43 times) and knowledge (mentioned 32 times). When answering why assessment is needed in the visual arts, only a few teachers admit that "so that the student can better see his own growth" and "understand the basic principles of art". However, the favorite topic is "ornament in national culture", which shows that it is easier to create a rubric for such a topic related to precision and structure.

In general, 80% of respondents indicated that assessment in art subjects is necessary. However, 20% of respondents stated that they do not consider the necessity to evaluate student artworks. Their responses consisted of statements such as "Creative work should not be evaluated", "Art should be like a therapy session", "Art is difficult to evaluate", "Art evaluation is a matter of taste" etc. Despite the fact that such responses were in the minority, they were sufficient to initiate a deeper investigation and questioning teachers about the assessment practices in the visual arts in school education.

The second-round questionnaire

At the second stage of the survey, an in-depth analysis of the problematic issues of art assessment was carried out with an emphasis on the experience of teachers using the rubric as an assessment tool. A three-point Likert scale was used (*never*, *sometimes*, *often*) to find out teachers' opinions about the objectivity of their assessment of students' works in art classes. The answer *never* was counted as a negative answer, while the answers *often* and *sometimes* were counted as positive. An overview of the results of this survey is provided below.

Table 1. Respondents' answers to the questionnaire (second stage, 2022)

Questions	Answers	
	Positive	Negative
1. Do you think your personal (subjective) opinion is present in the assessments of student work?	40%	60%
2. Do you use a comparison of student work ("best and worst") when giving a summative assessment?	65%	35%
3. Have you had a situation where, in your opinion, the summative assessment (on a 10-point scale) did not reflect the student's real achievements.	87%	13%

As can be seen from Table 1, more than half of the teachers rated their assessment practice as objective. On the other hand, answers to additional questions lead to a reconsideration of the objectivity of teachers' assessment practice, as they note that they use comparison of students' work, and do not always agree with criteria-based assessment.

The reasons for contradictions in the answers of individual teachers regarding the objectivity of assessment could be that either teachers find it difficult to determine appropriate criteria and points, or they still tend to evaluate students' work based on subjective judgments.

In the second part of the questionnaire teachers were asked to answer the questions related directly to the rubrics. Respondents expressed their opinion about the need for rubrics and noted whether they had any experience in using them. The results show that 61% of respondents consider rubric as a necessary tool in art assessment, 22% stated that rubric is inadequate tool for art assessment, and 17% admitted that they are not familiar with this kind of assessment. Therefore 64% of the same respondents noted that they do use rubric, while 36% prefer other methods of assessment.

Most of the respondents noted that they use rubrics in the assessment process, and yet the majority of these teachers (90%) have noted in the first part of the questionnaire that in their experience there are often situations when the summative assessment (on a 10-point scale) does not reflect the student's real achievements. Furthermore, in the response to the question of whether teachers have difficulty determining appropriate criteria and scoring, 88% of respondents admitted that they have some difficulties with creating an appropriate assessment tool on their own.

At the end of the survey, in a multiple-choice question, teachers were asked to select one or more criteria that, in their opinion, should be taken into account in art classes when evaluating works. And for the last question, they were asked to indicate one criterion that is most problematic to measure and evaluate. The results are shown in Figure 1.
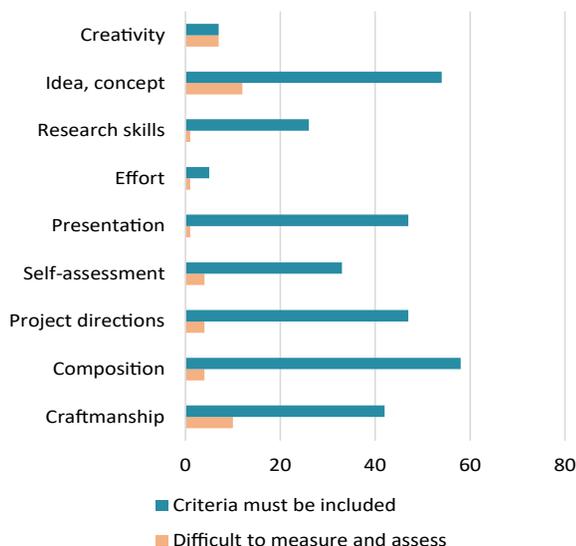
Figure 1. The selection of criteria for evaluating works of art and the difficulty of evaluating (measuring) criteria in teachers' experience

The most frequently respondents noted such criteria as composition (mentioned 58 times), the idea of the artwork (mentioned 54 times), planning and direction of the artistic project (mentioned 47 times), demonstration and presentation of the artwork (mentioned 47 times) and skill (mentioned 42 times) that are considered important when evaluating student's works. Whereas the most challenging for teachers is to evaluate students' work according to such criteria as the idea of a work of art (mentioned 12 times), creativity (mentioned 7 times) and craftmanship (mentioned 10 times).

Participant observation

In order to get a better understanding of the teachers' experience, using rubrics as an assessment tool, the participant observation was conducted during the Teacher professional development program «Evaluation of creative works in the art in school education». The total duration of the program was 36 hours with participation of 25 teachers of visual arts from general and professional schools.

Within the framework of the program, teachers were invited to listen to theoretical lectures on creativity and its development in students, as well as to participate in practical workshops, creating assessment tools for evaluating students' works in art classes. During the workshop, participant observation was carried out in order to get acquainted with the skills of teachers in compiling the rubric, as well as to identify the main problems that teachers face in this process.

At the beginning of the workshop, teachers looked at examples of ready-made rubrics and were invited to express their opinion about the possibilities of this tool, implementing an objective and meaningful evaluation of students' works. Teachers mainly highlighted the rubric's impediments when thinking about students' creativity. On the other hand, the lecturers motivated teachers and emphasized the possibilities and benefits of rubrics for improving the learning process. During the discussion, the participants' statements were recorded, in which they expressed their opinion on the use of the evaluation rubric in the art lessons. For analysis, quotations were selected expressing an opinion on the benefits or impediments of the rubric as an assessment tool. Key takeaways from the discussion are summarised below (Table 2).

Table 2. Participants' quotes from the discussion about the introduction of the rubric in the practice of evaluating creative works

Impediments (participants' arguments)	Benefits (lecturers' arguments)
"I really don't understand why everything must be described in such a detail. It is not realistic to do this in classes every day." "I will allow students to create works freely, I will not limit them in any parameters."	"How will the teacher know whether and in what quality the student will have achieved the learning goal? How will the teacher justify the grade to the student?" "How else can students understand what quality work is?"
"Another massive job that a teacher has to do in his spare time!"	"It is good if the students are also involved in creating the rubric. Maybe it could be introduced as part of the lesson?"
"Criteria can interfere with creativity and interfere with expressing oneself." "Criticism of work can harm the personality of a young student and the further development of creativity." "Extraordinary activity cannot be foreseen in the criteria!" "Creativity means that the student is always reaching for something new, so it is difficult to set static criteria."	"We should evaluate in such a way that evaluation becomes a learning tool and promotes self-regulation, metacognition and motivation." "Rubric criteria and description can serve as structural advice."

At the beginning of the rubric creation workshop, the instructor brought four samples of student work, which were projected onto the screen. The teachers were invited to an open discussion to exchange the views on the evaluation of each work. At the end of discussion, it was concluded, that the teachers could not come to a common decision on how to evaluate these works. The cause of the situation was that the teachers evaluated the work from their own point of view. Some judged by the technique, others were interested in the idea or the student's efforts in creating this work, etc. And the most common decision of

their assessment was based not on specific criteria, but on the comparison of students' work, when one work is better or worse than another.

The outcome of both discussions clearly reflected the importance of finding and agreeing on an objective assessment tool that would be clear, unambiguous, and understandable to all involved in the learning process, that corresponds to the guideline that creating rubric requires clear language about learning objectives associated with the lesson or learning task (Krause, 2010).

During the observation of participants in the workshop, when the teachers had to create the evaluation rubric, the difficulties were observed not only in the selection of criteria and division into levels of achievement, but also the lack of skills in choosing appropriate concepts was detected along with difficulties finding the right words while creating a textual description. Therefore, participants joined together and found it very useful to collect the most frequently used keywords and phrases to use when creating a rubric in a table, so that in the future they could only copy the desired criteria with a ready-made division into levels. The result of the collaborative work is reflected in the Table 3.

Table 3. Criteria, sub-criteria and useful keywords for assessment rubric in visual arts

Artistic Process	Criteria	Sub-criteria	Useful keywords
Foundation (framework)	Project directions (requirements)	Goal and objectives Guidelines Project expectations	Independence, responsibility, accuracy, relevance, preciseness
Creation	Research (investigations)	Samples (images, texts, hyperlink etc.) Sources Descriptions Self-reflection	Selection, quantity quality, relevance, variety
Creation	Creativity	Innovations Taking creative risks Experiments Sketches	Originality, uniqueness, quantity
	Technique and skills (craftsmanship)	Art medium Materials Tools Equipment	Selection, use, neatness, cleanliness, accuracy, attention to details
	Composition	Elements of art	Placement, use, arrangement, originality
Presentation	Demonstration (exhibit, share)	Use of media Content Organisation and timing Engaging the audience	Relevance, communication, preparation, explanation, confidence

Table 3. Continued

Artistic Process	Criteria	Sub-criteria	Useful keywords
Soft skills	Effort	Personal engagement Attitude Self-direction and focus Time management Improvements	Participation, activity Independence, responsibility
	Critical thinking	Interpretation Problem solving Pre-planning Envisioning Decision making	Independence, activity

The set of criteria (Table 3) was compiled in collaboration with participants and was based on the recommendations of the European Network for Visual Literacy (ENViL) (http://www.envil.eu). The above mentioned set of criteria met the requirements of the Latvian educational standard and the content of the curriculum.

Discussion

The results of the survey confirmed the relevance of the question of how to assess the arts in formal education, and whether teachers receive sufficient support to understand and acquire the necessary skills to master the use of new assessment tools. It can be concluded that difficulties in the assessment of students' works of art are present not because of the teachers' attitude towards the assessment of the creative process, but because of the lack of skills to determine the criteria and the appropriate number of points to measure them. This confirms the relevance of the question of how to assess the arts in formal education, and whether teachers receive sufficient support in acquiring the necessary skills and mastering the use of a new assessment tools.

After reviewing the documented quotes of teachers and lecturers from the participant observation in Table 2, references can be made to the decades-old research observations and scientific paper conclusions (Soep, 2005; Douglas, 2012; Burnard, 2011; McArdle & Wright, 2014) that were mentioned in the introductory part of this article. This shows that the issue of objective assessment and its importance in the modern educational process in general, as well as the nature and process of summative assessment in art education, is still relevant.

For example, pros and cons quotes (Table 2) like "I really don't understand why everything must be described in such detail" and "How else can students

understand what quality work is?" corresponds to necessity to rethink the purpose of assessment in general, focusing on that the educational goal of assessment is to motivate students and support their learning improvements (Pedder & James, 2012). Or the quotes "Another massive job that a teacher has to do in his spare time!" and "Criteria can interfere with creativity and interfere with expressing yourself." corresponds to the observation that creating rubric for teacher is very time-consuming task (Krause, 2010). During the workshop it was observed, that it is sufficient to provide teachers with clear assessment criteria and guidelines, and consistent moderation and consultations are necessary, while implementing a new assessment tool (Johnson, 2014). And in the final reflection part the teachers found it very useful to communicate with other teachers to share experiences, to reflect on each other's decisions (Gardner et al., 2014).

As the results of the survey showed, almost all the teachers who already use a rubric still face difficulties in conducting an objective and convincing assessment of students' work. Therefore, it is recommended to develop a practical guide for creating rubric that also includes templates with keywords for different types of assignments. It would also be useful to conduct a study of alternative assessment tools in school education that are relevant to the specifics of the arts.

Conclusion

Both the survey and participant observation have showed following problematics of art assessment within the school framework:

Creating sets of criteria in art is problematic due to its diversity, it is difficult to combine and balance objectively determined learning outcomes and subjectively determined creative expression in the same assessment rubric.

Expression in art largely reflects the student's own personality, feelings and thoughts. For this reason, the selection of criteria should be well thought out and balanced, and the students themselves should be involved in the selection of criteria and goal setting, so that the demands or assessment imposed by the teacher do not negatively affect the students' self-expression and at the same time help them understand what quality work means.

Although the specifics of the arts include elements that cannot always be measured, arts education also requires data that demonstrates student growth. This data is important both for the teacher and for the student. The teacher is evaluating the effectiveness of teaching methods and for a student this data serves as a tool for personal and professional development.

Teachers expressed insecurity about their skills in setting criteria and objective assessment, as evidenced by frequent concerns about their decision, fair and accurate assessment. Therefore, the teachers expressed the need for help in implementing this evaluation tool, for example, rubrics approved by senior officials or

a comprehensive manual and templates with criteria and their descriptions for different types of tasks.

Considering that the rubric as an evaluation tool was introduced in 2020 and within two years, teachers are still not confident in their competence to evaluate the achievements of students, it can be concluded that teachers have not received sufficient support for acquiring the new skill.

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Music Teachers' Job Satisfaction During the COVID-19 Pandemic

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ABSTRACT

The COVID-19 pandemic has radically changed the nature of the music teacher's job. The aim of the study is to determine music teachers' job satisfaction on four study scales – emotional well-being, social involvement, self-expression and achievement orientation. The following research questions were raised: RQ1: At what level do music teachers assess each of the study scales that describe job satisfaction? RQ2: Is there a statistically significant correlation between music teachers' job satisfaction during the COVID-19 pandemic and their emotional well-being, social involvement, self-expression and achievement orientation? RQ3: Is there a statistically significant difference in the levels of job satisfaction between music teachers who work only in comprehensive schools and those who have additional work in other music-related educational institutions? A questionnaire was created to achieve the study aim, in which the respondents ($N = 73$) had to assess the importance of various factors that affect the music teacher's job satisfaction on a Likert scale from one to four points. The study involved music teachers working in comprehensive schools and other educational institutions where music is acquired. The study results were reflected in four scales: (1) emotional well-being scale, (2) social involvement scale, (3) self-expression scale, and (4) achievement orientation scale.

The study revealed that the respondents rated all job satisfaction scales at a moderate level. Music teachers' job satisfaction during the COVID-19 pandemic is most affected by the inability to control school activities and the lack of positive emotions in daily life. The results do not show a significant difference in job satisfaction levels during the COVID-19 pandemic between music teachers who work only at comprehensive schools and those who have additional work in other music-related schools.

Keywords: achievement orientation, COVID-19 pandemic, emotional well-being, job satisfaction, music teachers, self-expression, social involvement

Introduction

A music teacher helps students discover their musical potential through singing, playing musical instruments and other musical activities. Therefore, a music teacher's job requires creativity, special knowledge and skills. Making music during the learning process needs a variety of sound tools and other material and technical means. The COVID-19 pandemic changed the specifics of a music teacher's job, as several conditions had to be considered in daily work. At first, the learning process took place remotely or online for several months. Secondly, at a time when it was possible to teach and learn face-to-face, it was necessary to distance yourself, wear face masks, ventilate classrooms, sanitize hands and various items, as well as observe other epidemiological requirements to reduce the risk of spreading COVID-19 infection at school. That had a significant impact on the pedagogical work of the music teacher. It was a challenge to provide singing in a face-to-face music lesson because of wearing face masks, and synchronous joint singing by several students when learning online was impossible due to different speeds and quality of the internet connections. Playing sound tools in music lessons also required extra work from the teacher, as they needed to be disinfected after each use. However, it was hard to provide all students with the necessary sound tools during learning music online. The various restrictions and additional responsibilities of teaching music face-to-face and online have changed the daily work of a music teacher beyond recognition. That may have affected the job satisfaction of music teachers. Therefore, **the aim of this study** was to determine music teachers' job satisfaction on four study scales – emotional well-being, social involvement, self-expression and achievement orientation.

Theoretical Background

The level of job satisfaction indicates the teachers' attitude towards their profession and the daily work they perform. Job satisfaction is associated with the positive emotional state of the music teacher and results from evaluating the daily work routine. Researchers recognize that job satisfaction is an essential requirement for teacher performance (Baluyos et al., 2019), it is related to individual work results (Iqbal et al., 2016; Ismail & Meran, 2021), enhances the status of the teaching profession (Toropova et al., 2020) and is decisive for employees' well-being and retention in the career (Dicke et al., 2019). Donald Boyd and his colleagues also point out that job dissatisfaction remains one of the main factors influencing teachers' decisions to leave the school (Boyd et al., 2011). Teachers' mobility and willingness to change workplaces are influenced by several factors such as administrative support, discipline enforcement, school safety, small class sizes, and access to high-quality professional development (Viano et al., 2020). It is essential for teachers to be mostly satisfied with the work they do.

Job satisfaction is examined in the context of gender, age, school type and location. Researchers do not have a clear research-based opinion on this issue. For example, a study by Michael Galanakis & Evmorfia Alamani (2020) determined that gender does not affect job stress and satisfaction. A similar result was obtained by Bhagat Singh's study (2016), which found that primary school teachers' job satisfaction was independent of gender. However, Ramazan Sak (2018) revealed that males have lower job satisfaction than females by studying the impact of gender differences on job satisfaction among preschool teachers. The opposite results were obtained by Volkan Burak Kibici (2021), who examined the job satisfaction of music teachers in the context of the COVID-19 pandemic and found out that men have a higher level of job satisfaction than women. There is also a difference in research-based evidence on job satisfaction among teachers who work in public or private schools. One study determined that teachers who teach in private schools are more satisfied with their work than public school teachers (Sungu et al., 2014), but another study found the opposite results (Kibici, 2021). Several studies have also revealed that younger teachers have higher job satisfaction than older teachers (McNeill, 2016; Kibici, 2021). However, one of the studies found that music teachers with more work experience who work in music schools are more satisfied with their work than their colleagues with less work experience (Sabljar et al., 2020). Huan Wang (2022) and colleagues report disturbing indicators for the level of job satisfaction among teachers in rural schools in China. In Latvia, teachers' job satisfaction does not depend on the location and the type of the school. In the early and late stages of careers, teachers are more satisfied with their work than in the middle of their working life (Geske et al., 2015). The contradictory results obtained in previous studies are determined by the differences in the sample size of the study, the location of the study, and the chosen research methodology.

To a large extent, the teachers' job satisfaction depends on the head of the educational institution and the school administration, who have an essential responsibility to take care of teachers. What should school administrations do to keep teachers satisfied with their work? Studies examining the effects of leadership style on teacher job satisfaction found that teachers are happier with their jobs when a democratic leadership style is used (Ch et al., 2017; Munir & Iqbal, 2018). The leadership approach of the school principal and the decision-making style determined job satisfaction among teachers (Hui et al., 2013). Researchers recommend that school principals have to decrease the supervision of teachers and give them more autonomy (Baluyos et al., 2019). Autonomy-supportive school leadership is associated with less stress and emotional exhaustion among teachers (Collie, 2021). School administration should make efforts to meet the needs of music teachers by allowing them to do what they like, including using innovative teaching methods and creativity (Feng & Angeline, 2011). That means ensuring

the professional freedom of teachers. Teachers need daily support, especially where they do not feel safe. In several studies, there is conflicting evidence about the effect of the emotional and informational support of school administration for teachers on job satisfaction. For example, Ramazan Ertürk (2021) determined in his research that supportive behaviours of school administrators can positively affect teachers' job satisfaction and subjective well-being. If school administrators provide moderate emotional and informational support for their teachers, they will also have decent job satisfaction. However, Beau Hannah (2021) proved that the job satisfaction of teachers who work in a school for the first year is not significantly affected by receiving emotional support or informational support. The researchers believe that the principals should improve the school climate because it is connected with teachers' job satisfaction (Aldridge & Fraser, 2016). There is a significant correlation between teachers' perceptions of school climate and job satisfaction. More attention should be paid to the school as an educational organization that ensures a healthy work climate and the necessary conditions for the teacher's professional development (Yuan & Chayanuvat, 2022). The school administration can influence the teacher's job satisfaction by choosing a management style and creating an appropriate school climate, as well as by providing the necessary support and at the same time ensuring autonomy.

Job satisfaction is multidimensional, which includes several aspects. That is proven by the results obtained in several studies where job satisfaction is analysed in the context of various influencing factors. For example, Gene Lynn Forsythe (2016) found out that job satisfaction refers to teachers' experiences and the respect and support they receive from others, which, in turn, creates a sense that the teacher can change something. Anna Toropova (2020) and her colleagues identified a significant relationship between teachers' job satisfaction and factors affecting schools' working conditions, such as work stress, teacher cooperation and perception of student discipline at school. On the other hand, Mahmut Polatcan and Ramazan Cansoy (2019) believe that a strong school culture with support, trust, justice and communication are the decisive factors that ensure teacher job satisfaction. The job satisfaction of music teachers is negatively affected by the low value of music in the school community, the dissonance between professional goals and community values, and isolation as an unseen barrier to student-centred goals (Padron, 2020). In developing countries, the autocratic management style, mistrust, non-transparent system, work-life imbalance, ineffective learning environment and lack of resources are the main factors that influence teachers' job dissatisfaction (Sahito & Vaisanen, 2020). In the last ten years, many studies (Kibici, 2021; McNeill, 2016; Sabljar et al., 2020; Sahito & Vaisanen, 2020; Wang et al., 2022) have been conducted on teachers' job satisfaction, but only some have analysed teachers' job satisfaction in the context of the restrictions and additional duties imposed during the COVID-19 pandemic.

Methodology

The following research questions were raised: RQ1: At what level do music teachers assess each of the study scales that describe job satisfaction? RQ2: Is there a statistically significant correlation between music teachers' job satisfaction during the COVID-19 pandemic and their emotional well-being, social involvement, self-expression and achievement orientation? RQ3: Is there a statistically significant difference in the levels of job satisfaction between music teachers who work only in comprehensive schools and those who have additional work in other music-related educational institutions?

The study involved 73 ($N = 73$) music teachers from all over Latvia, 97,3% are women, and only 2,7% are men. The majority of the respondents were between the ages of 51 and 60, and their work experience was mostly more than 20 years (see Table 1). All respondents teach music in comprehensive schools, and 17.8% of them work in other music-related educational institutions at the same time, for example, music schools or interest education centres.

Table 1. Age and work experience profile of online questionnaire respondents

	Years	f(%)
Age	21−30	8.2
	31−40	4.1
	41−50	24.7
	51−60	46.6
	Age above 60 years	16.4
Work experience	0−1	0.0
	2−5	6.8
	6−10	2.7
	11−20	5.5
	20 and above	84.9

The study took place in the period from March 2021 to May 2021. Music teachers had to evaluate their job satisfaction during the last year between March 2020 and March 2021.

A questionnaire was created for data collection and structured in two parts. The general part of the questionnaire marked respondents' age, work experience and type of schools. The conceptual part of the questionnaire consisted of 12 statements that the respondents should rate on a four-point Likert scale. The statements were grouped into four study scales: emotional well-being, social involvement, self-expression and achievement orientation. The questionnaire also included open-ended questions in which the respondents justified their opinion on each statement.

The questionnaire was in digital format and sent to music teachers from all over Latvia. It was anonymous, and the results were analysed as a whole. Participation in the study was voluntary.

The quantitative data were analysed using the SPSS 22 statistical analysis computer program. Cronbach's alpha coefficient was calculated for each study scale to examine the reliability and validity of the statements included in the questionnaire. The following descriptive statistics were calculated to identify at what level music teachers evaluate each of the study scales that described job satisfaction: Mean (*M*), Standard Deviation (*SD*), Standard Error of Mean (*SE*), Kurtosis and Skewness values. The following measurements are used to determine music teachers' job satisfaction levels on each scale. The average value from 1.00 to 2.00 points is a low level of job satisfaction, 2.01 to 3.00 points is a moderate level, and 3.01 to 4.00 points is a high level of job satisfaction. The One-Sample Kolmogorov-Smirnov test and One Sample t-Test were calculated to understand if there is a significant difference between the scores of respondents and the central tendency. The correlation coefficient was used to determine the relationship between two or more variables. This study defines the relationship between music teachers' job satisfaction during the COVID-19 pandemic and their emotional well-being, social involvement, self-expression and achievement orientation. The non-parametric Mann-Whitney U test was used to determine the difference in job satisfaction between music teachers who work only at comprehensive schools and those who have additional work in other music-related schools.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Results

The Cronbach's alpha test on the scales of emotional well-being (a = .797) and social involvement (a = .700) proves good internal consistency, but the scales of self-expression (a = .675) and achievement orientation (a = .638) indicate an acceptable level of reliability.

The music teachers have rated their emotional well-being (*M* = 2.53, *SD* = .620; D(73) = .160, *p* = .000), social involvement (*M* = 2.68, *SD* = .68; D(73) = .115, *p* = .019), self-expression (*M* = 2.57, *SD* = .591; D(73) = .111, *p* = .027) and achievement orientation (*M* = 2.75, *SD* = .598; D(73) = .167, *p* = .000) at a moderate level. The emotional well-being scale has the lowest average ratings of the four study scales (see Table 2). This scale determined how often music teachers experienced positive emotions and good moods and were

less exposed to negative stress during the last year. Such assessment could be related to the restrictions and the additional duties imposed by the COVID-19 pandemic. As a result, the music teachers rated their emotional well-being at a moderate level and lower than the other study scales.

The highest average ratings are for the research scale, which determined achievement orientation. This research scale identified the self-efficacy of music teachers, the ability to achieve the goals set in the music lesson and the desire to improve themselves professionally. This scale had the highest average ratings compared to the other scales of the study because the music teachers in the last year, to be able to implement new pedagogical approaches in the teaching process, had to improve themselves professionally a lot and regularly ($M = 3.10$, $SD = .986$; $t = 30.945$, $p = .000$). The respondents rated the professional development at a high level.

Table 2. Results of the study scales

Study scales	Mean	SD	SE	Kurtosis	Skewness
Emotional well-being	2.53	.620	.072	.058	−.379
Social involvement	2.68	.683	.080	−.023	−057
Self-expression	2.57	.591	.069	.319	−.124
Achievement orientation	2.75	.598	.070	.694	−.552

The social involvement scale revealed the opinion of music teachers about their activity in the school team, belonging to the team members and building positive relationships. During the COVID-19 pandemic, music teachers tried to maintain the desire to build positive relationships with colleagues ($M = 2.82$, $SD = .100$; $t = 20.425$, $p = .000$) and belonging to the school team ($M = 2.67$, $SD = .101$; $t = 22.507$, $p = .000$), however, they rated the opportunity to be active lower ($M = 2.58$, $SD = .102$; $t = 17.904$, $p = .000$) because they often lacked authenticity and physical presence.

The scale of the self-expression determined the opinion of music teachers about autonomy, the possibility of controlling ongoing activities and being creative. The music teachers' opinion about creative self-expression is very contradictory, so in this study scale, the opportunity to be creative ($M = 2.73$, $SD = .975$; $t = 25.904$, $p = .000$) was rated even slightly higher than the opportunity to be autonomous ($M = 2.54$, $SD = .915$; $t = 30.397$, $p = .000$) or control ongoing activities ($M = 2.46$, $SD = .106$; $t = 13.849$, $p = .003$).

The study found (see Table 3) that music teachers' job satisfaction is closely related to their emotional well-being ($r = .611$, $p < 0.01$), social involvement ($r = .550$, $p < 0.01$), self-expression ($r = .630$, $p < 0.01$) and achievement orientation ($r = .585$, $p < 0.01$).

Table 3. Correlation between music teachers' job satisfaction and study scales

Study scales		Music Teachers' Job Satisfaction
Emotional well-being	Pearson Correlation	.611
	Sig. (2-tailed)	.000
	N	73
Social involvement	Pearson Correlation	.550
	Sig. (2-tailed)	.000
	N	73
Self-expression	Pearson Correlation	.630
	Sig. (2-tailed)	.000
	N	73
Achievement orientation	Pearson Correlation	.585
	Sig. (2-tailed)	.000
	N	73

The results of the study show that the emotional well-being and social involvement of teachers who teach music only in comprehensive schools ($M = 2.69$, $SD = .658$; $M = 2.58$, $SD = .557$) are slightly higher than teachers who teach music at the same time in other educational institutions ($M = 2.61$, $SD = .814$; $M = 2.53$, $SD = .752$). A Mann-Whitney test indicated that this difference was not statistically significant ($U = 324.00$, z –.968, $p = .333$; U $= 409.50$, $z = .285$, $p = .776$). However, the teachers who work in comprehensive schools and other music-related educational institutions have rated the self-expression scale slightly higher ($M = 2.79$, $SD = .788$) than those who work only in general education schools ($M = 2.74$, $SD = .556$). A Mann-Whitney test indicated that this difference was not statistically significant ($U = 406.50$, z $= .242$, $p = .809$). The biggest difference in the opinions of music teachers was regarding the scale that characterized achievement orientation. Teachers who teach music in comprehensive schools and at the same time in other educational institutions ($M = 2.69$, $SD = .854$) were more achievement-oriented than teachers who work only in comprehensive schools. However, even on this study scale, a Mann-Whitney test indicated that the difference was not statistically significant ($U = 347.00$, $z = -.633$, $p = .527$).

Conclusion and Discussion

The first research question aimed to determine at what level music teachers evaluate their emotional well-being, social involvement, self-expression and achievement orientation. The study revealed that the respondents rated all study scales at moderate levels. However, the highest scores are for the scale that determined the achievement orientation of music teachers and the lowest characterized

emotional well-being. It indicates that even under the influence of the COVID-19 pandemic, music teachers are trying to maintain efficiency and improve themselves professionally, but the current situation affects their emotional well-being. Feeling good and focusing on achievements are essential for music teachers to be satisfied with their work. Volkan Burak Kibici's study also found a negative relationship between COVID-19 anxiety and the job satisfaction of music teachers (Kibici, 2021). Teachers show a high level of stress related to the new teaching demands created by the current situation in education (Pressley, 2021). Studies have also determined that efficacy is associated with greater job satisfaction among teachers and reduced wellness to leave the teaching profession (Grissom, 2011). The teachers who have more access to professional development and are more effective also have a higher level of job satisfaction (Toropova et al., 2020; Hderson, 2022). The relationship between teachers' self-efficacy and job satisfaction has been demonstrated in several studies (Aldridge & Fraser, 2016; Katsantonis, 2021; Türker & Kahraman, 2021; Polatcan & Cansoy, 2019).

Social involvement and self-expression are essential factors for music teachers' job satisfaction. Social involvement and especially the level of music teachers' activity in the school have been affected by the restrictions imposed during the COVID-19 pandemic. Some music teachers are more receptive to change and thus see the challenges as opportunities to be creative. At the same time, other music teachers believe that restrictions prevent them from being creative. Music teachers have a greater desire for autonomy and the ability to control the activities taking place in the school. Moreover, several studies have shown that job satisfaction is influenced by relationships and cooperation with colleagues and students (Adams, 2016; Olsen & Huang, 2019; Lopes & Oliveira, 2020), participation in decision-making (Bahtilla & Hui, 2021; Ch et al., 2017; Taiwo & Ogunlade, 2020) and autonomy (Chew, 2016).

The second research question aimed to reveal if there is a statistically significant relationship between music teachers' job satisfaction during the COVID-19 pandemic and their emotional well-being, social involvement, self-expression and achievement orientation. The study found that music teachers' job satisfaction is correlated positively with all four study scales – emotional well-being, social involvement, self-expression and achievement orientation.

The third research question determined if there is a statistically significant difference in the levels of job satisfaction between music teachers who work only in comprehensive schools and those who have additional work in other music-related educational institutions. Although emotional well-being and social involvement were rated slightly higher by music teachers who work only in comprehensive schools than by those who at the same time teach music in other educational institutions, this difference was not statistically significant. In addition, there was no statistically significant difference in respondents' opinions

regarding self-expression and achievement orientation, even if these study scales were rated slightly higher by music teachers who teach music in both comprehensive schools and other educational institutions.

In a further study, it is necessary to explore whether the opinion of music teachers on job satisfaction using the same study scales will change after lifting all COVID-19 restrictions.

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Use of Music and Openness in a Group of Teachers-in-Training Receiving a Musical Intervention

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ABSTRACT

The effects of music education on cognitive abilities have raised great interest among scholars of education and learning. According to literature, the use of music in pedagogical practices enhances learning processes with positive impact on the intellectual and social development of students. The main objective of this study was to explore the personal experience with music of teachers-in-training while participating in a musical intervention. The intervention, included both theoretical and practical modules, was delivered during a Digital Storytelling (DST) course. Specifically, our main aim was to investigate possible relationships between the personality openness dimension of teachers-in-training, the role of music in their personal life, and rewards they perceived associated with music. 818 teachers-in-training attending the DST class in an online specialisation course at the University of Foggia were enrolled. After their informed consent was obtained, they completed an online survey including three self-report questionnaires: The Big Five Inventory (BFI; John et al., 1991), The Brief Music Experience Questionnaire (Brief-MEQ; Werner et al., 2006 and the Barcelona Music Reward Questionnaire (BMRQ; Mas-Herrero et al., 2013). The research study was approved by the Institutional Review Board of the University of Foggia. In order to test the associations among the studied variables, correlations (Pearson's r) and a CFA analysis were conducted using the SPSS software. Results showed that teachers who reported to positively use music daily ($r = .67$), especially enjoy in sharing music with other people, and teachers who reported to use music as a reward in terms of special connection with it ($r = .64$), also reported higher levels of openness (originality, curiosity, reflective thinking, imagination, invention, giving values to artistic and aesthetic experiences). Our results highlight the importance of including music in learning processes as a possible mediator able to enhance teachers and students' socio-emotional and cognitive skills.

Keywords: Digital Story Telling, music education, music intervention, openness, teacher-in-training

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Introduction

The effects of music education on cognitive abilities have aroused growing interest in the scientific community in recent years. The study of musical disciplines is associated with a greater development of both intellectual (multiple intelligences, general and factorial intelligence) and executive functions of students (Gardner, 2016; Medina-Garrido & Mejorando, 2017; Vélez & Rico, 2017; additionally, numerous studies confirm the ability of music to trigger physiological responses, such as changes in heart rate, breathing, skin temperature and conductance as well as hormone secretion (Koelsch, 2012).

It is difficult to associate music lessons with academic achievement (Dumont et al., 2017) since there are several variables involved including personality traits that can act as advantageous factors for the development of the cognitive functions and motivation to follow music lessons (Corrigall et al., 2013). The longitudinal analysis conducted by Jaschke and colleagues (2018), for example, has shown that music education positively influences the cognitive abilities of children at 6 years of age, especially those relating to inhibition and planning. The study also reveals an effect of transfer of skills, from musical education to academic performance, mediated by executive sub-functions. Considering the beneficial effects of music on the development of children in relation to emotional intelligence, academic performance and prosocial skills (Blasco-Magraner et al., 2021) it could, therefore, be concluded that music should be used in school settings, not only as an important subject in itself, but also as an educational tool within the curricula.

The role of music on cognitive and emotional development can be explained by several factors. First of all, the human neural processing of music involves an extremely complex and widespread bilateral network of cortical and subcortical areas that integrate various functions including auditory, cognitive, motor, sensory and emotional ones (Koelsch, 2011). Furthermore, music is an essential component of many social activities and differences in music preferences tend to vary widely from person to person. The relationship between personality and artistic preferences has received considerable attention from psychologists over the years, in an effort to further delineate the predictive utility of traits on specific factions of human behavior. Understanding the relationships between music preference and personality may inform applications of music therapies.

According to Chamorro-Premuzic and Furnham (2007) people listen to music as a means of emotion regulation, cognitive stimulation, and as a background stimulus. Further, Chamorro-Premuzic and Furnham (2007) hypothesized and found evidence for individual differences in uses of music, whereby individuals rating high in trait neuroticism were found to use music as a medium for emotion regulation, whereas openness to experience correlated positively with cognitive uses of music. These findings provide a sense of coherence between trait and

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behavior; individuals experiencing a high degree of negative affect as a function of trait neuroticism may be predicted to engage in music listening as a means of regulating mood states, just as those fascinated by aesthetic beauty and art may use music as a means of cognitive stimulation by actively appreciating the complexity of musical compositions. Openness to experience, indeed, has been found in several studies to be associated with cognitive and intellectually-stimulating functions of music listening and neuroticism with affect-regulating functions (i.e., regulating moods and emotions; (Chamorro-Premuzic & Furnham, 2007). Moreover, Chamorro-Premuzic and Furnham (2007) showed that intelligent and intellectually-engaged people are likely to listen to music for cognitive stimulation, and that introverted people tend to use music for affect regulation.

Other variables also influence the uses of music (North et al., 2004; Greb et al., 2019. For example, being alone while listening to music helps to reduce tension and loneliness (Tarrant et al., 2000). Singing in group and average level of attention to music are associated to higher levels of wellbeing than solo singing (Greasley & Lamont, 2011; Stewart & Lonsdale, 2016; Greb et al., 2019.

The significant effects of music on brain function have led to the implementation of specific therapies that use music as a therapeutic tool, in sectors including in psychiatric rehabilitation as well as therapies for contrast of cognitive aging, regulation of neural development of premature babies, and treatment of diversabilities (Chorna et al., 2019; James et al., 2020; Koelsch, 2011; Lordier et al., 2019; Sihvonen et al., 2020; Torppa & Huotilainen, 2019).

Technology is a tool that is capable of enhancing the association between music education and intelligence. In this the digital revolution, transliteracy mediates the breakdown of the limits of traditional educational practice to develop the potential of all learners. Technology, therefore, contributes to the evolution of education by promoting socialisation, personalised learning and high levels of motivation and involvement (Fabbro et al., 2017; Toto, 2019). For example, Lv and Luo (2021) have shown that online platforms have the potential to generate more creative approaches for music teaching and improve student performance since having online resources allows for a higher quality of both teaching and learning. The literature has, therefore, demonstrated the usefulness of not only music education but also of technology as a means of teaching it to improve cognitive, relational and psychological skills.

The association between musical education and intelligence is supported by the fact that musical ability in humans play a key phylogenetic role in the evolution of language and cognitive abilities in general. In fact, music and language share the hierarchical structure of their subcomponents and the neural bases (Yu et a., 2017); moreover, pedagogical practice that is mediated by music induces benefits on general learning, emotional communication and reflexive as well as metacognitive abilities (Biasutti, 2017). It can be concluded that music education

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has a strong impact on the intellectual, social and personal development of children, young people and the elderly, and therefore on the psychological well-being of the individual throughout his life.

The current study

The main objective of this study was to explore the personal experience with music of teachers-in-training while participating in a musical intervention. The intervention, included both theoretical and practical modules, was delivered during a Digital Storytelling (DST) course. Specifically, our main aim was to investigate possible relationships between the personality openness dimension of teachers-in-training, the role of music in their personal life, and rewards they perceived associated with music.

Method

The intervention, called *'DST music and soundtracks'*, was constituted in the model of the University of Foggia (present below) (Limone et al., 2021) in a theoretical lesson on listening to music, musical intelligence and three international good practices (Toto, 2017) of technology-mediated music teaching in which students observe student treatment, behaviour and outcomes of this teaching practice. As an alternative to the latter theme, it is possible to replace it with a lesson on rhythm for which no prior knowledge of musical content is required. This first phase lasts for 2 hours.

As shown in table 1, the group of students who were subjected to a second theoretical-experiential treatment centred on the following themes:

1) In-depth study of neuro-aesthetic studies concerning the neural basis of musical appreciation with particular reference to the theories of Brattico and Pearce (2013), according to which musical aesthetic experience consists of aesthetic emotions, aesthetic judgments and manifestations of preference, and Zentner et al., (2008) who elaborated a model of nine music-induced emotions called GEMS.

2) Analysis of musical structures and characteristics that are capable of determining positive or negative sensations in a constant and universal way. Distinguishing between consonant and dissonant harmonic intervals that are the basis of tonal and atonal music, which is typical of twentieth century composers. Listening to the piece, "Duo for Bruno", by Franco Donatoni and analysing the main characteristics at compositional and stylistic level.

3) In-depth study of the role devoid of familiarity and expectations in musical appreciation: "exposure effect" (Ritossa & Rickard, 2004) and "boredom effect".

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4) Analysis of the functions performed by music in films with reference to the essay, "Sound and image. Music, voice, noise and silence in films", by Vincenzo Ramaglia, edited by Dino Audino. For each function, brief theoretical explanation and viewing of extracts from some well-known film scenes is included such as predictive function in "The Shark" by Spielberg, interpretative function in "A Clockwork Orange" by Kubrick with Rossini's soundtrack, provocative function in "Bowling for Colombine" by Michael Moore with the soundtrack "What a wonderful World" by Amstrong, and function of moral connotations of the characters.

This second treatment lasted 45 minutes.

Table 1. Music tutorial for DST

1) Theoretical phase	▸ Emotional Intelligence;
	▸ Musical listening;
	▸ Good practice;
	▸ Rhythm lesson.
2) Theoretical-experiential phase	▸ Neuro-aesthetics;
	▸ Musical emotions;
	▸ Musical exhibitions;
	▸ Soundtrack functions.
3) First individual exercise	▸ Listening track;
	▸ Elicitate emotions.
4) Second group exercise	▸ Evocation of music;
	▸ Film.
5) Third group exercise	▸ Music association to Storyboard on personal history.

The third intervention opens with an individual exercise structured as follows:

Individual exercise 1 (30 minutes). Everyone listens to three minutes of the pieces that follow and mark, in the appropriate exercise file (represented in Table 2), the relative emotion felt between the following:

Table 2. Table of emotions in music

Wonder	Transcen-dence	Tender-ness	Nostalgia	Tranquil-lity	Power Joy	Tension	Sadness

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The tracks used for the experiment were as follows:
- "Mars" (from "The Planets"), by Gustav Holst
- "La Primavera" (from "The Four Seasons"), by Antonio Vivaldi
- "Adagio" in G minor, by Tommaso Albinoni and Remo Giazotto
- "Night on Bald Mountain"
- "Adagio for strings", op. 11 by Samuel Barber
- "Midsommarvarka", by Hugo Alfvèn

With a break of 10 to15 minutes, a second exercise is structured in small groups of 8–10 people according to the following model: indicate, as a group, which characteristics of the music according to the listener induce the sensations described above (30 minutes). Moreover, participants were asked: Which movie or scene would you match each of the following fragments to?
- "Bonito" by Jarabe de Palo
- "Beggin" by Maneskin
- "This must be the place" by Talking Heads
- "Getting older" by Billie Eilish
- "Photograph" by Ed Sheeran
- "The passenger" by Iggy Pop

The last intervention comprises an exercise to choose a soundtrack that is consistent with a work produced in a previous workshop to write a storyboard on a personal story:
- 3rd group exercise (30 minutes): replace the media included in the story-board with non-copyrighted media using the repositories indicated in the file "attached to exercise 3".

Participants

The research is developed in the Italian context, where the specialisation course of teachers is online, and it groups teachers on a national scale; therefore, students belong to all areas of Italy (63% from southern Italy; $n = 818$). The maximum age for the respondents was 60 and the minimum was 22. Out of all the respondents, 125 (15.28%) were males and 690 (84.72%) were females.

In fact, the teachers who were interviewed received a follow-up to all eight steps of the Foggia model, by passing an exercise phase where they worked individually to a collective phase where they worked in groups. The interviewees were an adult population belonging to different areas of Italy with an extensive training course.

The final version of the questionnaire, in addition to demographic questions on gender, age and grade of school, presented 76 Likert-type questions relating to the previous three scales with which the user could express various levels of agreement or disagreement.

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Measures

The Big Five Inventory

The Big Five Inventory (BFI) was developed by John, Donahue and Kentle in 1991. The BFI in the English version consists of 44 items and allows for an efficient and flexible assessment of the five dimensions of personality. The construction of the items was derived from the definitions of the Big Five prototypes that were developed by Robert R. McCrae and Paul T. Costa in 1985. The authors postulated five big dimensions (Big Five) of personality: extroversion-introversion, agreeableness-unpleasantness, conscientiousness-neglect, neuroticism-emotional stability and open-mindedness-closed-mindedness. The items are short and they avoid complex sentence structures to maintain the advantages of brevity and simplicity and avoid some pitfalls such as ambiguous or multiple meanings and desirability. Participants rate each item on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Scores on the scale are calculated as the participant's average item response (i.e., adding all items rated on a scale and dividing by the number of items on the scale). Some items are evaluated by means of a Likert scale by inverting the score and replacing 1 with 5, 2 with 4, 4 with 2 and 5 with 1. The result then generates a total score for each personality dimension. Despite its brevity, the BFI does not sacrifice either the exhaustiveness of the contents or the good psychometric properties. Recently, the BIF-2, which contains 60 items, has also been published to measure traits at both domain and facet levels as well as control compliance bias.

The Brief Music Experience Questionnaire (brief MEQ)

The MEQ comprises a questionnaire on the role of music in the life of the subject, the items that concern his thoughts, feelings and reactions to the music and how it relates to other activities. The subject is asked to indicate, for each statement, an answer using a scale ranging from 1 (very false) to 5 (very true). The questionnaire measures individual differences in the relationship with music using a short version of 53 items built in 1995 by Paul Werner, Alan J. Swope and Frederick Heide (2006). The first version of the MEQ comprised 141 items and was developed in 1992 by them. The scales in the short version have been developed on a rational and theoretical basis and have been refined through item analysis to increase internal consistency and reduce redundancy between scales. The scales are as follows: commitment to music (centrality of the search for musical experiences in the person's life), innovative musical aptitude (ability to perform music as well as generate musical themes and works), social uplift (experience of being stimulated and raised in a group-oriented manner by music), affective reactions (affective and spiritual reactions to music), positive psychotropic effects (calming, energising and integrating reactions) and reactive musical

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behaviour (behavioural responses including humming, swaying, etc. along with music). Recently the scale was used by Calma-Roddin and Drury (Calma-Roddin & Drury, 2020) to probe the innovative musical aptitude in order to explore the relationship between language and music.

The Barcelona Music Reward Questionnaire (BMRQ)

The BMRQ was developed by Mas-Herrero, Marco-Pallares, Lorenzo-Seva, Zatorre and Rodriguez-Fornells in 2013 (Mas-Herrer et al., 2013). The authors intended to study the musical experience by probing, in particular the reward associated with music. The questionnaire consists of 20 items that require responses averaged on a Likert scale ranging from 1 (absolutely disagree) to 5 (absolutely agree). The musical reward experience has been operationalised in five dimensions: musical research, evocation of emotions, mood regulation, social reward and sensory-motor reward. These factors were correlated with socio-demographic factors and measures of general sensitivity to reward and hedonic experience. The reliability calculated for the overall BMRQ is acceptable and equal to 0.92. The questionnaire was recently used by Ferreri and Rodriguez-Fornells (Ferreri & Rodriguez-Fornells, 2017) to study the relationship between music, reward and memory. The authors demonstrated that music-driven reward responses directly implicated higher cognitive functions and probably explained the individual differences in memory performance.

The research study complied with the general ethical principles of the Declaration of Helsinki and was approved by the research team's University Institutional Review Board, protocol code 40979-III.11 and approved on 16 October 2021 issued by University of Foggia.

Results

Reliability Analysis

Reliability analysis was used to check the reliability of questionnaire by Cronbach alpha C_α ranges from 0 to 1. If C_α is greater than 0.9 considered as Excellent, $C_\alpha = 0.9 > \alpha \geq 0.8$ is good, $0.8 > \alpha \geq 0.7$ is acceptable, $0.7 > \alpha \geq 0.6$ is questionable, $0.6 > \alpha \geq 0.5$ is poor and $0.5 > \alpha$ is Unacceptable.

Table 3 shows the reliability of the questionnaire which is consist of four sections that is Demographic variables, BFQ, Barcelona and Music Experience (MEQ). Demographic variables have 3 questions the C_α is 0.101 which is considered as Unacceptable, BFQ has ten Elements with C_α is 0.8444 is considered as good. Barcelona (BAR) has 20 elements with $C_\alpha > 0.8$ which is considered as Good and Music expertise have excellent value of Cronbach's alpha. Overall reliability of all questionnaires with 79 elements is excellent.

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Table 3. Reliability Analysis

Variable	Items	Cronbach's Alpha	Performance
Demographic Variables	3	0.101	Unacceptable
BFQ	10	0.844	Good
BAR	20	0.846	Good
MEQ	46	0.915	Excellent
Overall Reliability	79	0.938	Excellent

Descriptive Statistics

Table 4 shows the descriptive statistics for BFQ that includes minimum, maximum, mean and standard deviation of every variable. As shown in above table maximum and minimum value of very variable is 1 and 5 except, curious about many different things and likes to reflect, play with ideas having minimum value is 2. Mean value of coming up with new ideas is 3.63 with standard deviation 0.875, mean and standard deviation of curious about many different things is 4.05 and 0.805. Mean value of people prefers work that is routine likes to reflect, play with ideas is 3.89 with standard deviation 0.772, artistic interest have mean 4.11 and 0.979 standard deviation.

Table 4. Descriptive Statistics for BFQ

	Min.	Max.	Mean	Std. Deviation
Is original, comes up with new ideas	1	5	3.63	.875
Is curious about many different things	2	5	4.05	.805
Is ingenious, adeep thinker	1	5	3.63	.885
Has an active imagination	1	5	3.77	.844
Is inventive	1	5	3.66	.843
Values artistic, aesthetic experiences	1	5	3.74	.896
Prefers work that is routine	1	5	3.80	.949
Likes to reflect, play with ideas	2	5	3.93	.772
Has few artistic interests	1	5	4.11	.979
Is sophisticated in art, music, or literature	1	5	2.87	1.034

Table 5 shows the descriptive statistics for music choice for people live in Barcelona Minimum and Maximum value for each variable is same. Mean value for "When I share music with someone, I feel a special connection with that person" is 3.96 with standard deviation 0.896, Mean value for "In my free time I hardly listen to music" is 2.13 with Standard deviation 1.275. Mean responses of "I like listen to music that contains emotion" is 4.55 with standard deviation

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0.781. participants mean responses on "Music keeps me company when I'm alone" is 4.33 with standard deviation 0.781. Respondents in Barcelona thinks "Music makes me bond with other people" with mean response is 4.09 with standard deviation is 0.858.

Table 5. Descriptive Statistics for Barcelona

	Min.	Max.	Mean	Std. Deviation
Special connection	1	5	3.96	.896
I hardly listen to music.	1	5	2.13	1.275
Emotion	1	5	4.55	.781
Alone	1	5	4.33	.908
Don't like to dance	1	5	1.82	1.194
Bond with other people	1	5	4.09	.858
Inform myself about music	1	5	4.12	.938
Emotional listening to certain	1	5	4.69	.634
Calms and relaxes	1	5	4.49	.721
Makes me dance	1	5	3.99	1.075
Looking for new music	1	5	3.49	1.040
Listen to a melody	1	5	4.03	1.127
Sing or play an instrument	1	5	3.35	1.268
Helps me chill	1	5	4.39	.807
Can't help humming or singing	1	5	4.39	.871
Feel connected to the performers	1	5	4.17	.915
Quite a bit of money	1	5	2.65	1.113
Feel chills	1	5	4.45	.784
Music comforts me	1	5	4.19	.884
Can't help tapping	1	5	4.02	1.007

Table 6 shows the descriptive statistics for Brief Music Experience. Mean Value of "I frequently hear songs in my head" is 4.44 with standard deviation 0.707. Mean responses of "I feel more integrated (more "together") when I hear certain kinds of music" is 4.18 with standard deviation 0.864. The mean responses of "I often sing, hum, or whistle along with recorded music" is 4.22 with standard deviation 0.856. Mean value of "I would never want to listen to the same piece of music twice in a row" is 2.09 with standard deviation 1.081. Mean responses of "When I'm enjoying music with other people, I feel like we're speaking the same language" is 4.17 with Standard deviation 0.828. "I've had musical experiences that have changed my whole mood" with mean value 3.99 and Standard deviation is 1.005. Mean responses of the respondents on "I enjoy singing in the

shower or bath" is 3.65 with Standard deviation 1.231, for "I sometimes spend more money than I can afford to attend a musical performance" is 2.24 with standard deviation is 1.190, for "It is hard for me to keep the beat when Dancing" is 2.13 with Standard deviation 1.171. Mean responses on "Music unites my mind and my body" is 4.14 with standard deviation 0.920.

Table 6. Descriptive Statistics for MEQ

	Min.	Max.	Mean	Std. Deviation
Frequently hear songs	1	5	4.44	.707
More integrated	1	5	4.18	.864
Sing, hum, or whistle	1	5	4.22	.856
Same piece of music twice	1	5	2.09	1.081
Enjoying music with other people	1	5	4.17	.828
Musical experiences changed mood	1	5	3.99	1.005
Singing in the shower or bath	1	5	3.65	1.231
Attend a musical performance	1	5	2.24	1.190
Beat when dancing	1	5	2.13	1.171
Unites my mind and body	1	5	4.14	.920
Made me feel joyous	1	5	1.50	.883
Music that has a message	1	5	4.12	.885
Singing a beloved song	1	5	4.05	.945
Private experience	1	5	3.72	.989
Family had sung together	1	5	3.41	1.188
Patriotic songs	1	5	3.42	1.044
Childhood	1	5	3.19	1.287
Physically stirred up	1	5	1.24	.735
Important thing in my life	1	5	3.17	1.004
Forget my cares	1	5	3.80	.953
Hardly resist dancing	1	5	3.77	1.145
Sense of purpose and movement	1	5	3.96	.910
Closer to a higher power	1	5	3.60	1.075
Beat or rhythm in music	1	5	3.95	.930
Depth of my concentration on music	1	5	3.80	.996
Swaying in tune with music	1	5	3.91	1.034
Never affects my feelings.	1	5	2.08	1.132
No place in my life	1	5	1.50	.885
Helps me get out of myself	1	5	3.72	.972
Draws me strongly to dance	1	5	4.02	1.001

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Table 6. Continued

	Min.	Max.	Mean	Std. Deviation
Sacrifices in my life	1	5	1.94	1.147
Certain musical performers' lives	1	5	3.23	1.183
Kinds of music	1	5	4.14	.809
Musical recordings	1	5	1.89	1.056
Music being performed	1	5	3.40	1.167
Feel so lonely	1	5	3.76	1.038
Tap my feet or hands	1	5	4.03	.939
Better able to face the world	1	5	3.62	1.036
Emotional side of music	1	5	1.74	.940
Some kinds of music	1	5	3.80	1.014
Aroused and satisfied	1	5	3.24	1.037
Sense of order	1	5	2.43	1.237
Period of my life	1	5	4.53	.687
Influence my emotions	1	5	4.16	.848
Life would be meaningless	1	5	3.13	1.256
Experiences of ecstasy	1	5	3.72	1.145

Correlation

Table 7 shows the correlation between BFQ and Barcelona variables, Correlation basically tells us a strength of the relationship between two variables from the above table the relationship between "When I share music with someone I feel a special connection with that person" and "Is original, comes up with new ideas" is 0.234 which is a weak, this variable also shows weak relationship with all the variables of BFQ , Second variable of Barcelona is "In my free time I hardly listen to music" shows the weak and negative relationship with all variables of BFQ. Researcher observed that the correlation between all variables of Barcelona with BFQ variables have weak relationship none of the pair shows the strong strength relationship.

Table 8 shows the Chi square test for BFQ variables at 5% level of significance. First variable of BFQ is original comes up with new idea shows the Chi square value is 2.475 with 4 degree of freedom whose p value is greater than 0.05 so we conclude that the variable shows the non-significant effect, all variables of BFQ Chi square shows the non-significant effect with p value is greater than 0.05 except "Prefers work that is routine" it shows significant effect with chi square value is 10.02 with p value 0.04 which is less than 0.05.

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Table 7. Correlation between BFQ and Barcelona

	BFQ_5	BFQ_10	BFQ_15	BFQ_20	BFQ_25	BFQ_30	BFQ_35	BFQ_40	BFQ_41	BFQ_44
Bar_1	.234**	.277**	.299**	.262**	.204**	.320**	.086*	.279**	.228**	.301**
Bar_2	−.102**	−.112**	−0.062	−.106**	−0.065	−.160**	−.129**	−.111**	−.287**	−.124**
Bar_3	.125**	.241**	.133**	.130**	.083*	.184**	.110**	.147**	.177**	.117**
Bar_4	.145**	.190**	.167**	.138**	.152**	.139**	0.057	.140**	.193**	.151**
Bar_5	−.102**	−.137**	−0.037	−.097**	−0.065	−.159**	−.205**	−0.066	−.196**	−0.011
Bar_6	.189**	.265**	.200**	.188**	.169**	.248**	.165**	.203**	.252**	.205**
Bar_7	.214**	.287**	.226**	.236**	.197**	.287**	.186**	.170**	.364**	.250**
Bar_8	.122**	.236**	.115**	.135**	.098**	.178**	.154**	.195**	.241**	.093**
Bar_9	.137**	.218**	.130**	.158**	.112**	.183**	.161**	.182**	.232**	.120**
Bar_10	.132**	.169**	0.045	.124**	.087*	.163**	.121**	.114**	0.066	.090*
Bar_11	.288**	.274**	.251**	.217**	.250**	.320**	.094**	.233**	.244**	.305**
Bar_12	.126**	.140**	.100**	.199**	.093**	.192**	0.054	.136**	.174**	.145**
Bar_13	.231**	.254**	.176**	.198**	.160**	.309**	.137**	.168**	.203**	.303**
Bar_14	.135**	.178**	.155**	.155**	.129**	.183**	.152**	.162**	.203**	.164**
Bar_15	.134**	.189**	.156**	.202**	.101**	.185**	.158**	.179**	.182**	.136**
Bar_16	.196**	.218**	.243**	.214**	.158**	.278**	.135**	.166**	.237**	.222**
Bar_17	.206**	.195**	.229**	.163**	.185**	.327**	.084*	.126**	.196**	.382**
Bar_18	.164**	.197**	.145**	.191**	.103**	.191**	.176**	.167**	.249**	.154**
Bar_19	.157**	.193**	.198**	.204**	.192**	.221**	.086*	.175**	.208**	.216**
Bar_20	.108**	.174**	.102**	.145**	.105**	.184**	.160**	.118**	.130**	.143**

Table 8. Chi-square test for BFQ variables

Variables	Chi-Square	D.F	*p* value
Is original, comes up with new ideas	2.475	4	0.649
Is curious about many different things	2.032	3	0.565
Is ingenious, a deep thinker	3.892	4	0.421
Has an active imagination	3.547	4	0.471
Is inventive	0.8	4	0.939
Values artistic, aesthetic experiences	3.734	4	0.443
Prefers work that is routine	10.02	4	0.04
Likes to reflect, play with ideas	2.045	3	0.563
Has few artistic interests	1.325	4	0.857
Is sophisticated in art, music, or literature	5.703	4	0.222

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Table 9 shows the Chi-square test for Barcelona variables at 5% significance level, Chi square value of "When I share music with someone, I feel a special connection with that person" is 6.675 with 4 degree of freedom shows the significant effect as p value is 0.015 which is less than 0.05. Chi square value of "I can't help humming or singing along to music that I like "is 8.35 with 4 degrees of freedom, shows significant effect as P value is less than 0.05 and "At a concert I feel connected to the performers and the audience" also shows the significant effect on the model with p value is less than 0.05. other all variables p value is greater than 0.05 which is non-significant for the model.

Table 9. Chi-Square for Barcelona Variables

Variables	Chi-Square	D.F	p value
Special connection	6.675	4	0.015
I hardly listen to music.	3.505	4	0.477
Emotion	0.503	4	0.973
Alone	4.038	4	0.401
Don't like to dance	7.168	4	0.127
Bond with other people	1.785	4	0.775
Inform myself about music	0.747	4	0.945
Emotional listening to certain	5.455	4	0.244
Calms and relaxes	2.422	4	0.659
Makes me dance	7.502	4	0.111
Looking for new music	3.656	4	0.455
Listen to a melody	3.74	4	0.422
Sing or play an instrument	6.848	4	0.144
Helps me chill	2.431	4	0.657
Can't help humming or singing	8.35	4	0.008
Feel connected to the performers	4.928	4	0.029
Quite a bit of money	3.174	4	0.529
Feel chills	3.127	4	0.537
Music comforts me	3.638	4	0.457
Can't help tapping	5.408	4	0.248

Table 10 shows the chi square test for Brief Music Experience. The Chi Square value for "It is hard for me to keep the beat when dancing" is 13.756 whose p value is 0.008 which is less than 0.05 so its shows the significant effect on the model. Chi square value for "I wish my family had sung together more when I was growing up" is 11.993 with p value 0.017, it shows the significant effect on the model, "I have never been physically stirred up by music" shows the chi

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square value is 13.252 with p value is 0.01 is significant. Chi square value of "I am especially responsive to the beat or rhythm in music" is 14.518 whose *p* value is less than 0.05 so it also shows the significant effect, "I often find myself swaying in tune with music to which I'm listening", "Music has no place in my life", and "Certain music draws me strongly to dance" shows the significant on the model because *P* value of those variables is less than 0.05. Other variables of Brief Music Experience show the non-significant effect on the model because Chi Square Test shows the P value is greater than 0.05 level of significance.

Table 10. Chi-Square Test for Brief Music Experience

Variables	Chi-Square	D.F	*p* value
Frequently hear songs	4.345	4	0.361
More integrated	1.661	4	0.798
Sing, hum, or whistle	3.571	4	0.467
Same piece of music twice	1.096	4	0.895
Enjoying music with other people	1.567	4	0.811
Musical experiences changed mood	3.383	4	0.496
Singing in the shower or bath	7.011	4	0.135
Attend a musical performance	2.288	4	0.683
Beat when dancing	13.756	4	0.008
Unites my mind and body	6.534	4	0.163
Made me feel joyous	0.451	4	0.978
Music that has a message	0.4531	4	0.339
Singing a beloved song	1.076	4	0.898
Private experience	3.589	4	0.464
Family had sung together	11.993	4	0.017
Patriotic songs	3.645	4	0.456
Childhood	2.6	4	0.627
Physically stirred up	13.252	4	0.01
Important thing in my life	6.069	4	0.194
Forget my cares	8.408	4	0.078
Hardly resist dancing	2.116	4	0.714
Sense of purpose and movement	7.738	4	0.102
Closer to a higher power	8.367	4	0.079
Beat or rhythm in music	14.518	4	0.006
Depth of my concentration on music	2.487	4	0.647
Swaying in tune with music	9.681	4	0.046
Never affects my feelings.	7.094	4	0.131
No place in my life	9.993	4	0.041
Helps me get out of myself	1.463	4	0.833

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Table 10. Continued

Variables	Chi-Square	D.F	p value
Draws me strongly to dance	10.565	4	0.032
Sacrifices in my life	5.472	4	0.242
Certain musical performers' lives	4.082	4	0.395
Kinds of music	4.197	4	0.38
Musical recordings	1.208	4	0.877
Music being performed	1.387	4	0.847
Feel so lonely	2.818	4	0.589
Tap my feet or hands	3.882	4	0.422
Better able to face the world	1.456	4	0.834
Emotional side of music	1.623	4	0.805
Some kinds of music	1.785	4	0.775
Aroused and satisfied	0.77	4	0.999
Sense of order	0.767	4	0.93
Period of my life	2.45	4	0.654
Influence my emotions	3.436	4	0.488
Life would be meaningless	1.128	4	0.89
Experiences of ecstasy	0.725	4	0.948

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is a statistical technique used to verify the factor structure of a set of observed variables. CFA allows the researcher to test the hypothesis that a relationship between observed variables and their underlying latent constructs exists. Figure 2 shows the Confirmatory Factor analysis for the model from above figure Coefficient of determination between Brief Music Experience and BFQ is 0.64 it shows the model explained 64% variability in the model, Barcelona and BFQ shows 67% variability in the model and Barcelona and Brief Music Experience shows 95% variability in the model where e1, e2 …., e15 are unobserved errors in the above model.

Table 11 shows the Comparative Fit Index (CFI) of the model from the above table for default and saturated Model TLI and CFI is 0.838 and 0.865 these two values indicates the default model is progressive, for saturated model CFI is greater than 0.93 so we can conclude that our model is acceptable. The Root Mean Square Error of Approximation is a parsimony-adjusted index (Table 12). Values closer to 0 represent a good fit. It should be $< .08$ or $< .05$. For the default model our RMSEA value is 0.069 lies between the C.I[0.063,0.076] so, it represents the good fit. And P- Value is less than 0.05 so it shows significant effect.

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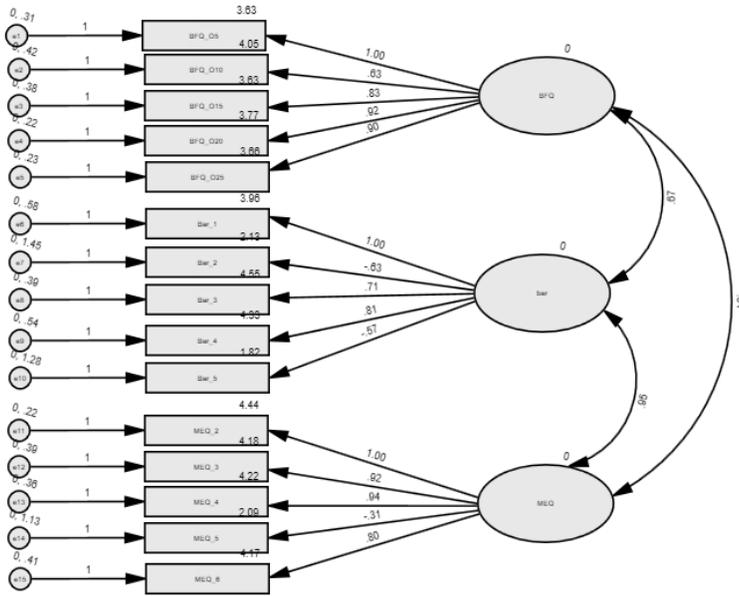
Figure 2. Confirmaty factor analysis

Table 11. Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.838	.804	.866	.838	.865
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Table 12. RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.069	.063	.076	.000
Independence model	.172	.167	.178	.000

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Discussion & Conclusions

The results reported in the previous sections demonstrate that musical intervention in a digital storytelling laboratory, if properly designed, can produce important effects in learning. Specifically, the teachers in the initial training course who declare their love for routine work and reflection are particularly oriented to playing with new ideas and artistic interest. Additionally, the choice of the musical piece is linked to the dimension of sharing and social relationship between people. This treatment, although delivered as online teaching, produced the same results as face-to-face teaching (Alamos, 2019). The value that these teachers give to music in general is, however, linked to an intimate value, which they try to share in the peer group through exercises from the musical treatment. The most interesting result in the present study that should be further investigated is the very strong correlation between social relationship and creativity in generating innovative ideas. Music is, therefore, seen not as a distracting element (Soares Brito & Vieira, 2017), but as a creator (Alamino-Fernàndez, 2020) of social aggregation (Jeremić, et al., 2020). Besides, musical learning in childhood has a significant value and there is a belief that an early and familiar stimulation of music affects musical choices and knowledge in adulthood.

Furthermore, the study perspectives on musical intelligence have aligned with the current educational orientations by focusing attention on two structural dimensions of music: cognitive and emotional. The study of music must allow the development of a "unique" and original thought although, in reality, musical intelligence crosses other forms of intelligence and thought, makes them its own and at the same time contributes to develop and strengthen them (Custodio & Cano-Campos, 2017). Therefore, education through music, but also education in music. The second dimension, the emotional one, calls into question the education to affectivity since it develops reflection on the emotions themselves and their symbolic "putting into shape". Besides, education in affectivity favours decentralisation, with respect to them, since music implies knowledge, recognition and management of emotions through listening and reflection.

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Spatial Reasoning Skills as a Universal Learning Outcome

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ABSTRACT

Over the last decades, the importance of spatial reasoning skills in all areas of life, including education, has received increasing attention while at the same time recognizing the need for solutions to organize learning processes to foster spatial reasoning skills.

Connectivism learning theory emphasizes the importance of an individual's ability to navigate today's information space in the learning process. According to Connectivism, to learn is to create a microsystem of personal learning within the macrosystem of society by creating a Personal Learning Environment to promote learning autonomy and self-regulated learning strategies.

Implementing Universal Design principles in education provides a theoretical framework for an inclusive educational solution based on respect for each learner's unique learning and strategies, as determined by innate abilities and experiences gained through interactions with the environment and society. This study aims to explore the possibilities of modeling the educational process using a Universal Design approach and principles in the context of Connectivism learning theory, focusing on spatial reasoning skills as a prerequisite for diversity and developing an organizational process-oriented model to foster spatial reasoning skills as a learning outcome. The developed model of study organization has been validated in a design study process; the results allowed for the creation and justification of recommendations for using the research results in other study programs and future research.

Keywords: Connectivism learning theory, educational process, learning outcome, spatial reasoning skills, Universal Design

Introduction

One of the primary purposes of 21st-century education is not only to master new knowledge but to administer the process of mastering this knowledge as well, for learners to become experts in studying and persons who are eager to

study and can perform the learning process in a strategically and individually unique mode, thus becoming lifelong learners.

"Space is the basic component of our cognition" (Ishikawa & Newcombe, 2021) and spatial reasoning enables us to collect the results of spatial thinking not only to solve the adaptive task of grasping, analyzing, and forming conclusions about the information obtained but also by mentally structuring, combining, or otherwise transforming it, to creatively develop new solutions and spatial combinations (Newcombe & Huttenlocher, 2003). The skill to reason and operate in diverse situations according to the decision has been mastered all lifelong. The obtained experience is one of the essential preconditions of diversity. Concerning the learning process, it can be concluded that students have different spatial reasoning skills at the start of their studies, determined by a combination of individual abilities, age differences, and the circumstances (family, socio-cultural environment, previous education) in which previous spatial experiences were formed.

The Universal Design principles (Mace, 1997), which articulate a user-centered and inclusive design approach, provide a conceptual framework for implementing student-centered learning environments, recognizing diversity as the norm rather than the exception.

Research shows that the way people learn is authentic and, at the same time, changeable, learnable, and improvable through the learning process. The method or strategy of learning is determined by innate abilities and acquired experiences (Zhang & Evans, 2015).

The processes associated with developing digital technologies in the 21st century have paved the way for a paradigm shift in education, providing opportunities to learn in before previously impossible ways (Siemens, 2005). The space in which we acquire knowledge has expanded, from the school as a physical place in the 19th century where "knowledge is acquired" (Barr & Tagg, 1995), to the digital intellectual environment of the 21st century (Siemens, 2008). Connectivism learning theory emphasizes the importance of navigating information space in the learning process, arguing that learning in today's context of information diversity enabled by information and communication technologies means learning to navigate between these points of connection (Downes, 2019).

Education is a multidisciplinary field, but it must be acknowledged that several disciplines do not imply a transdisciplinary approach (Choi & Pak, 2007). As a significant disadvantage of scientific research on spatial reasoning over the centuries, it reveals a significant gap in research on how "spatial reasoning" is understood and studied across academic disciplines. The first historical map produced shows the evolution of spatial reasoning in major scientific fields, where it is evident that educational researchers do not include the vital work of psychologists and neuroscientists and vice versa (Bruce et al., 2017, p. 4).

The authors of this study argue that a greater emphasis on transdisciplinary research maybe be timely, and perhaps even necessary, in the evolution of educational research" (Bruce et al., 2017, p. 1).

This study aims to construct a theoretical framework to explore the possibilities of modeling the educational process using the Universal Design approach and principles in the context of Connectivism learning theory, focusing on spatial reasoning skills as a prerequisite for diversity.

Methodology

An integrative literature review method was used to achieve the study's aim. An integrative review approach can be useful when the purpose of the review is not to cover all articles ever published on the topic, but rather to combine perspectives to develop new theoretical models (Snyder, 2019). Unlike a semi-structured review, an integrative review often aims to assess and synthesise new knowledge, weaving together ideas from the literature on the research topic to create the basis for a new theoretical framework in a unique synthesis model (Torraco, 2016). The review followed a conceptual structure, focusing in this article on spatial reasoning and the possibilities of promoting spatial reasoning skills in the organisation of the educational process. Literature on spatial thinking and the promotion of spatial reasoning in the organisation of educational processes were selected for review only if it met all of the following criteria: books and peer-reviewed scientific journal articles dealing with spatial reasoning as an essential prerequisite for individual diversity, especially for achieving learning outcomes, were selected for review. Articles in non-peer-reviewed scientific journals and non-professional publications were excluded from the review. Publications, books and journal articles on spatial reasoning published in the last 40 years (since 1983) were selected for review. Publications that met the above criteria were selected for review in Cognitive Psychology and Education (Universal Design in education and Connectivism learning theory). A holistic approach is utilized, integrating findings of cognitive psychology, implementation of the principles of Universal Design in education, and Connectivism learning theory, to establish correlations.

Literature review

Firstly: the study provides some essential insights into significant research findings in cognitive psychology.

It is important to emphasize that the concept of space encompasses physical and intellectual domains and their representation and interaction over time and that spatial reasoning skills help not only to structure and organize but also to analyze

and explain the vast amount of data that we can acquire and store in memory (Downs & DeSouza, 2006). Research in cognitive psychology and neuroscience, well documented in the scientific literature, shows the diversity of processes involved in spatial thinking. In space and time, spatial reasoning is a tool for determining spatial relations between the static and the dynamic, between the self and other objects and entities in space. It is itself a complex and dynamic process that allows us to describe, explain and predict the structure and function of space in both real and imagined spatial environments, as well as to generate hypotheses, make predictions and define possible consequences (Downs & DeSouza, 2006). However, how we learn about a space acquires a symbolic sense of meaning in our understanding, and the context of the space, and at the same time the social situation in which we receive the information, is a determining factor in shaping comprehension, meaning, and significance (Newcombe et al., 2013).

Moore-Russo et al. (2013) define spatial literacy, i.e., spatial reasoning skills, as the organization of the spatial thinking process and conceptualize three functional domains involved: visualization, reasoning, and communication, which overlap and influence each other (Moore-Russo et al., 2013). Spatial reasoning is both an internal mental process involving visualization and argumentation and a public process that is communicated in three primary ways: graphically, kinaesthetically, and verbally, using spatial information code systems (graphics, body language, verbal communication) as tools (Downs & DeSouza, 2006; Newcombe et al., 2013).

Spatial skills are malleable and can be enhanced: even a small amount of training can improve spatial reasoning skills for everyone, regardless of age or gender, and in a purposeful learning process, the levels of spatial reasoning skills converge; therefore, spatial training programs can play a vital role in education (Uttal et al., 2013).

The ability to reason and infer using spatial patterns and structures is essential in many arts and sciences. Spatial reasoning skills are needed in every field of knowledge, especially medicine, physics, education, and design (Lee & Bednarz, 2012), yet its importance in learning is under-recognized and under-valued (Downs & DeSouza, 2006).

In order to identify spatial objects and understand the properties of and relationships between objects – hence to promote spatial reasoning, Golledge (2002) emphasizes the importance of the concept of language as a code for spatial information and suggests organizing the learning process sequentially from the simplest to the most complex:
  • start by clarifying the basic concepts,
  • to add individual spatial concepts, skeletonizing the overall relationships,
  • demonstrate how a spatial concept is formed from the aggregates,
  • engage students in independent reasoning (Golledge, 2002).

The scientific literature suggests that the process of studying spatial contexts and spatial examples can be a variety of learning processes organized through the use of spatial contexts in both the presentation and discussion of information:

- promotes spatial thinking and reasoning (Terlecki et al., 2008),
- enables learning outcomes that are robust, long-lasting, and at the same time flexible in their application to different problem-solving situations (Mohler & Miller, 2008; Sorby, 2009),
- is efficient and can reduce the time required for learning in any discipline (Rovet, 1983).

Summarizing the theoretical findings related to the promotion of spatial reasoning skills in the study process, three essential conditions for the development of spatial reasoning skills:

1. Comprehension:
   - context of information (Glass et al., 2013),
   - accurate and justified use and explanation of linguistic concepts,
   - verbal communication is supported by graphic diagrams, pictures, spatial patterns, and appropriate gestures) (Newcombe et al., 2013);

a study process that provides a varied display of information provides comprehension of space in the context of the social situation, which is the first essential condition for developing spatial reasoning skills;

2. Opportunity:
   - the right to an opinion (*students' voice*) (Toshalis & Nakkula, 2012),
   - active engagement,
   - use of own learning strategies (Mann, 2006);

the opportunity for multiple involvement and participation in the learning process according to the diversity of students' learning in time and space is another essential prerequisite for promoting spatial reasoning skills.

Toshalis and Nakkula (2012) argue that without engagement and "voice," there is no authenticity in learning, and without motivation, there is no incentive to learn (Toshalis & Nakkula, 2012).

Neuroscience research shows that if the experience is gained through active engagement. A student-centered learning process enables students to engage in active learning experiences and thus becomes relevant to their everyday lives (Hinton et al., 2012).

3. Motivation:
   - establish task value,
   - promote mastery goals,
   - promote belonging,
   - promote emotion regulation,

- promote expectancy for success,
- promote autonomy (Belland et al., 2013);

Secondly, the study explores how the implementation of principles of the Universal Design in education correlates with the findings mentioned before to facilitate the students' spatial reasoning skills.

At the turn of the 20th and 21st centuries, Universal Design principles were adapted to education through several models, including Universal Design for Learning (UDL) (Rose, 2001; Rose & Meyer, 2006); Universal Design for Instruction (UDI) (Shaw et al., 2001; Scott et al., 2003), and Universal Instructional Design (UID) (Silver et al., 1998). These are not in competition with each other but rather complement each other (Higbee & Goff, 2008). The three theories mentioned above are often cited in the literature as a conceptual framework for accessibility in education to create inclusive learning environments for all students (Rao et al., 2014).

The principles developed in UDL, UID, and UDI focus on the organization of flexible teaching and learning processes to meet the diverse needs of students (Hall et al., 2012).

Summarizing the insights and principles developed by all three theories, it can be concluded that the implementation of Universal Design principles in the organization of the study process is characterized by:

1) an inclusive and welcoming learning environment based on respect for the individuality of each person, recognizing student diversity as the norm rather than the exception, with an emphasis on fostering an understanding of personal responsibility for the decisions made:
2) diverse opportunities for action, cooperation, interaction, and communication,
3) versatility of material presented,
4) the activity of the lecturer – assessing the relevance of his/her approach to the diversity of the students.

The study reveals how theoretical insights on promoting spatial thinking skills relate to the principles of Universal Design in education according to contemporary learning theories in a diverse open-access information space.

Summarizing the theoretical findings related to the promotion of spatial reasoning skills in the study process, it can be concluded that a supportive study environment and lecturer's actions, which correspond to the diversity of students, create prerequisites that enable students to make spatial judgments in communication (diverse communication opportunities) and to develop an understanding of spatial information in the context of the social situation (diversity of presented material), as well as encourage each student to develop personal awareness and attitudes (see Figure 1).

Students' spatial reasoning skills
promotion prerequisites

UD principles in the study process

Inclusive and welcoming study atmosphere	**Motivation**
The versatility of the opportunities for action, cooperation, interaction, and communication	**Opportunity**
The versatility in the presentation of the information and the action of the lecturer in compliance with the students' diversity	**Comprehension**
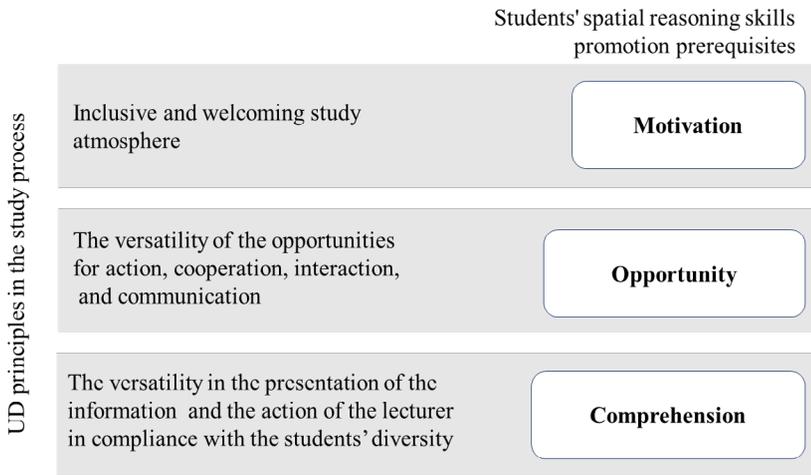
Figure 1. Student spatial skills-enhancing study process, Author's concept

Thirdly analyzing the main concepts of the Connectivism learning theory study investigates the factors that determine the learning required in today's complex and fast-changing information environment where an almost unlimited amount of knowledge is available (Downes, 2019).

According to Connectivism understanding, the starting point of learning and knowledge is the individual or the subject. The knowledge of the subject is a multimodal structure and is formed in interaction with the social environment and society, which in turn becomes an object in the social environment and influences the development of knowledge (personal network organization) of other individuals or subjects (Siemens, 2005, p. 2). Connectivism provides a rationale for the learning that is needed in the new digital age and the tasks that need to be undertaken in the learning process so that students not only acquire knowledge, skills, and competencies but also know how to use them in different social and cultural spaces, transforming them into new situations (Kersh et al., 2012) while promoting learning autonomy and self-regulated learning strategies (Schmidt et al., 2013). Connectivism learning theory emphasizes that acquired knowledge finds meaning in a context that shows the relationships between individual facts (Siemens, 2008; Downes, 2012).

Moreover, the tasks that need to be undertaken in the learning process so that students not only acquire knowledge, skills, and competencies but also know how to apply them in unforeseen situations in different spaces of social and cultural life and activity. Connectivism learning theory emphasizes the importance of the individual's ability to navigate the modern information space creating a unique

Personal Learning Environment (PLE) to promote learning autonomy and self-regulated learning strategies. The principles of creating a PLE and its implementation in the learning process according to Connectivism are characterized by five aspects (Downes, 2007) (see Table 1).

Table 1. Personal learning environment, Author's concept

Nr.	Principles	Implementation tasks
1	Informative community	Providing links between diverse information sources/objects
2	Creative activities	A creative approach, looking for new solutions rather than memorizing facts
3	Context of information	Assessment of the gained information in every situation
4	Support tools	Use of communication technologies
5	Diversity of participation	Opportunities for autonomy and choice

Results

The symbiosis of the insights of the Connectivism learning theory and the implementation of the Universal Design principles in education is an application of the model of the organization of the learning process focusing on spatial reasoning skills.

The organizational model of the learning process aims to provide an inclusive and receptive learning environment, respecting the student's existing spatial reasoning skills at the beginning of the study, which becomes a frame of reference and a starting point for learning and understanding new information. The result of an investigation of the Universal Design principles in education and principles of creating a PLE according to Connectivism learning theory provides the theoretical framework for creating an organizational process-oriented model to promote spatial reasoning skills as a learning outcome (see Figure 2).

The model developed as a result of the research is based on a symbiosis of the insights of Connectivism learning theory and the principles of Universal Design in education. The organizational model of the study process aims to provide an inclusive and receptive study environment, with respect for each student's identity or the student's existing spatial reasoning skills at the start of the study, which becomes a frame of reference and a starting point for learning and understanding new information. The student's personal learning environment, in which opportunities for collaboration, interaction, and participation are provided by the lecturer's assessment of the students' diversity and the demonstration of a variety of information, will shape the student's understanding of the context of the information acquired according to the social situation.
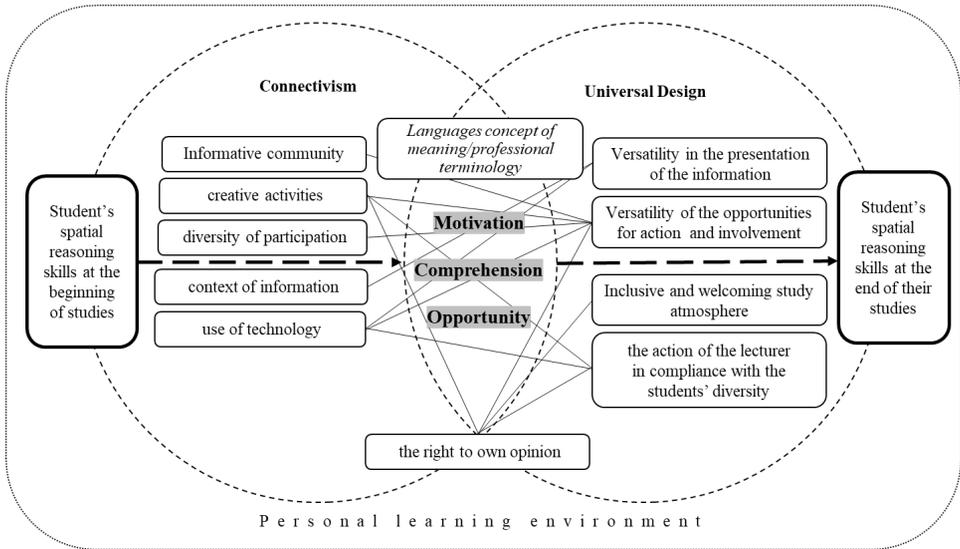
Figure 2. The organizational process-oriented model of studies, Author's concept

In contrast, the opportunity to communicate their unique judgment, experience, and creativity in the learning process will encourage the motivation to develop personal opinions and justify the decision-making process, promoting the student's spatial reasoning skills as a learning outcome.

Conclusions

Summarizing the theoretical findings on the promotion of spatial reasoning skills in the study process, it can be concluded that a study process that provides:
- the versatility in demonstration of information (the interconnection of sources/objects in context, also using the possibilities offered by digital communication technologies),
- versatility of engagement (autonomy and choice according to the diversity of students' learning in time and space, including the creation of a learning community within social networks),
- the opportunity for debate and the "right to your own opinion."
- a motivating, inclusive and supportive learning environment,

is grounded in Connectivism learning theory as an embodiment of the Universal Design principles in education and promotes spatial reasoning skills.

The developed model of study organization has been validated in a design study process; the results allowed for to creation and justification of recommendations for the use of the research results in other study programs and future research (Karlsone, 2017).

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Sketching – an Undervalued Tool in General Education

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ABSTRACT

Sketching is one of the key activities that characterise the process of visualising ideas in the creation of design products and artworks. Sketching skills are necessary to record observations. In addition, sketching can be used to capture new information. In the new State basic education standard of Latvia, sketching has a noticeable place in both design and technologies and art. The study aimed to investigate the role of sketching in the general education of students – future teachers of primary school education, future design and technologies teachers, and future designers. A survey (n = 126) was used to achieve the aim. The results show that sketching is to a greater extent and more diversely taught in visual arts than in home economics and technologies. Almost a fifth of the respondents (19%) did not learn sketching in visual arts, and almost half (48%) – in home economics and technologies. Most respondents consider that a sketch is a rough idea for a work, a draft of a work, and its main characteristic is quickness. 43% associate sketching with drawing techniques. Students use sketching most in free sketching situations and in generating ideas for visual artworks. Students sketch equally to record observations and stylize them as well as to visualize design product ideas. Most students emphasise that sketching needs to be practised, it is a way to visualise thoughts and ideas, and it stimulates creativity. Most students believe that sketching has an impact on the result of product design (both speed and quality), and they also stress that sketching ideas makes it easier to choose which idea to pursue.

Keywords: design and technologies education, drawing, idea visualization, sketch, visual arts education

Introduction

The research "Sketching – an undervalued tool in general education" has been developed at the Faculty of Education, Psychology and Art of the University of Latvia in the framework of the 2022 research project "Human, technologies and

quality of education". The study involves four researchers from the Department of Art and Technology and aims to develop criteria for assessing sketches and new study tasks in sketching to be integrated into the study courses at the University of Latvia. This article is devoted to the initial phase of the study.

This phase aimed to investigate the experience of students of study programmes "Teacher of Primary School Education", "Teacher of Design and Technologies", and "Art": their previous experience in sketching in general education, their sketching habits now and their perceptions of the usefulness of sketching. A survey was used to achieve the aim.

Sketching is one of the key activities that characterise the process of visualising ideas in the creation of design products and artworks (Buxton & Buxton, 2007; Sung et al., 2019; Ceylan & Soygenis, 2022). Sketching skills are necessary to record observations. In addition, sketching can be used to capture new information. In the new State basic education standard of Latvia, sketching has a noticeable place in both design and technologies, and arts. With the reform of general education in Latvia, learning to sketch has been included as an outcome in design and technologies education in grades 1–12 (Noteikumi par valsts pamatizglītības standartu un pamatizglītības programmu paraugiem Nr. 747 [Regulations regarding the state basic education standard and model basic education programmes No. 747], 2018; Noteikumi par valsts vispārējās vidējās izglītības standartu un vispārējās vidējās izglītības programmu paraugiem Nr. 416 [Regulations regarding the state general secondary education standard and model general secondary education programmes No. 416], 2019). This means that sketching skills are a must for future design teachers.

Sketch and sketching in general

To carry out the survey of students at the beginning of the research and to analyse the results of the questionnaire, a theoretical base was initially established by collecting materials explaining the definition of sketch and sketching. In dictionaries, the term 'sketch' is interpreted both as a small work of art that is the result of observation and experience and as a draft of a work of art. The dictionary of the Latvian literary language explains a sketch as an image in which the main features of an object or an impression, idea or conception are recorded in a generalised and non-detailed way (Latviešu literārās valodas vārdnīca [Dictionary of Latvian Literary Language], 1972–1996). The various explanations of the term also show two main types of sketches, which also mark the functions of sketches: observational sketches and sketches of ideas. "Sketches (…) record information, to remind one's self or to convey information and preserve it for others. They externalize internal thought, making it visible to self and others" (Heiser et al., 2004, p. 69). "A sketch has been defined as a preliminary,

rough representation without detail, usually rapidly executed to present only key elements of the design" (Pei et al., 2011, p. 67).

In several explanations of what a sketch is, it is closely related to a drawing. For example, Eckert et al. (2004) use the word 'sketch' in two related senses: (1) it is an informal drawing on paper with rough details, (2) it is a quick, informal, imprecise description in which details are tentative or missing. "Sketching, commonly defined as **'drawing'**, is an activity that all human beings are involved in on some level" (Ceylan & Soygenis, 2022, p. 325). "A sketch is quick and somewhat rough, not a finished **drawing**" (Pistone, 2002, pp. 25–26).

Dictionaries also suggest linking the term 'sketch' to specific techniques: drawing and painting. In dictionary explanations, a sketch is a rough, unfinished, undetailed, simply, or hastily executed drawing or painting (Oxford University Press, n. d.; American Heritage Dictionary of the English Language, 2016; Random House Kernerman Webster's College Dictionary, 2010).

When talking about sketching as a process, several authors note the impact of sketching on visual thinking. "Sketching is beneficial because it supports visual thinking. Visual thinking is a preferred cognitive strategy in design …" (Goldschmidt, 2014, p. 445). "Sketches can be defined as supportive tools for the human brain's visualisation process of mental images" (Ceylan & Soygenis, 2022, p. 325).

Research also highlights that sketching is a way of communicating and generating ideas. Greenberg et al. (2011) point to several advantages of sketching in terms of quickly recording, visualising and comparing ideas, communicating, sharing and discussing them, choosing ideas worth pursuing, and using the results of sketching later. Finally, they mention the function of sketching as making the design process exciting and fun.

Types of sketches

As already mentioned, the definitions of sketch and sketching also include references to the types of sketches. One of the ways to divide them stems from whether the sketches relate to fine art or design. Another way to sort would be whether the sketches are the result of observation or the visualisation of an idea (Thurlow et al., 2019). If sketches are created to visualise ideas and to be easy to work with for the author and others, then one of the criteria for categorising sketches is what the sketches are created for.

When it comes to design product sketches, Pei et al. (2011) divide them into four groups depending on the purpose of the sketch, the user, and the detail of the sketch:

1) personal (idea, study, referential and memory sketches),
2) shared (coded and information sketches),
3) persuasive (renderings and inspiration sketches),
4) handover sketches.

If we recall, in several definitions of sketch it was mentioned that it is not detailed, however, the rendering sketches in group 3, according to the authors, represent the exact shape, colours, and tones of the product, while the sketches in group 4 are technical images containing information about the production. Therefore, there is a discrepancy between the sketch definitions and the established division.

Buxton and Buxton (2007) describe design sketches as quick, timely, cheap, disposable, multiple, with clear visual vocabulary, with specific features that distinguish them from other visual representations, with a sense of freedom, minimal detail, and ambiguity because they are open to interpretation.

Variety of materials and techniques used to create sketches

The study also focused on the techniques and materials that can be used for sketching. As can be seen from the definitions of sketching discussed above, sketching involves drawing or drawing and painting. Artists, designers, and art researchers suggest varying the sketching techniques. Kinard (2009) recommends the use of a soft sketching pencil, black-ink pen, and crayons. Cheney and McAllister (2013) point out that there is no right or wrong way to draw, suggesting different tools and grounds, combining techniques, using collage and all kinds of paper techniques. Meech (2009) also recommends the use of different papers, sketch pads, black-coated scrap-board, and a variety of dry and wet media: pencils, graphite sticks, erasers, charcoal, chalk pastels, oil pastels, etc. Leimanis (2021) also recommends the use of different coloured grounds and materials for sketches, looking separately at materials for the early construction phase (e.g., pencils, coloured pencils, grey markers, etc.) and materials for details and atmosphere in the final sketching phase (e.g., charcoal, erasers, pastels, Conté, ink, watercolour, etc.).

Brown (2013) points out that there are several ways to sketch design ideas, for example in clothing design. Besides free sketching, one option is to use a template of a garment shape as a base, another is to create collages, and yet another is to create 3-dimensional works by draping fabric on paper or a mannequin. Here again, there is a contradiction between some definitions of sketching, which relate sketching only to drawing and painting techniques, and the recommendations of practising designers for sketching.

Kinard (2009) recommends using sketchbooks to draw or post sketches and to take notes. Her suggestions for sketching are based on studying the natural or subject environment, using a window-tool to find compositions to sketch, or taking photographs.

Methodology

The study aimed to investigate the role of sketching in the general education of students – future teachers of primary school education, teachers of design and technologies and future designers. To achieve the research objective, four research questions were formulated:

RQ1: What is the sketching experience of students in visual arts and home economics and technologies in general education?

RQ2: What is students' understanding of what sketch and sketching are?

RQ3: How and what do respondents sketch daily?

RQ4: How do students understand the importance of sketching?

A survey with 28 questions was designed to achieve the research objective. 7 questions were designed to find out information about the respondents, 9 questions to find out the respondents' experience in sketching, 4 questions to find out what and how the respondents sketch daily, and 8 questions to find out the respondents' opinions and understanding of sketching. Mostly multiple-choice questions were used, 25 in total; 15 of them using a Likert scale with ranks from 1–5 (see Pipere, 2016). According to the recommendations (Geske & Grīnfelds, 2006), multiple-choice questions included the option "other answer". In addition, three open-ended questions; one to elicit general information about the respondents, and two to elicit the respondents' views on sketching. As recommended by Geske and Grīnfelds (2020), the questionnaire was first pre-field-tested and field-trial-tested, after which some questions were refined.

The survey was distributed electronically to professional bachelor study programme (PBSP) "Art" students, PBSP "Teacher of Design and Technologies" students and PBSP "Teacher of Primary School Education" students (for study years 1, 2, and 3 in the spring semester of the academic year 2021/22).

Student participation in the study was voluntary and the survey was anonymous. Following the principles and ethical aspects of data protection, informed consent was obtained from all participants. The data was used only in aggregate form. Answers to open-ended questions received codes.

The results of the survey were analysed quantitatively and qualitatively.

Characteristics of respondents

Electronic surveys were received from 126 respondents. All respondents are studying in professional bachelor study programmes. 53% of respondents are studying in the programme "Art": 38% to acquire the qualification of a graphic designer, and 15% – the qualification of an interior designer. 47% of respondents are studying to be teachers: 29% for primary education teachers, and 18% for design and technologies teachers (see Figure 1). The largest number of respondents are 2nd-semester students (64%), followed by 4th-semester students (19%) and 6th-semester students (17%). The respondents obtained their secondary

education in various regions and localities of Latvia. 40% of respondents received their secondary education in Riga, 25% in Vidzeme, 21% in Zemgale, 9% in Kurzeme and 5% in Latgale. 39% studied in small towns, 16% in big cities, and 5% in rural areas.
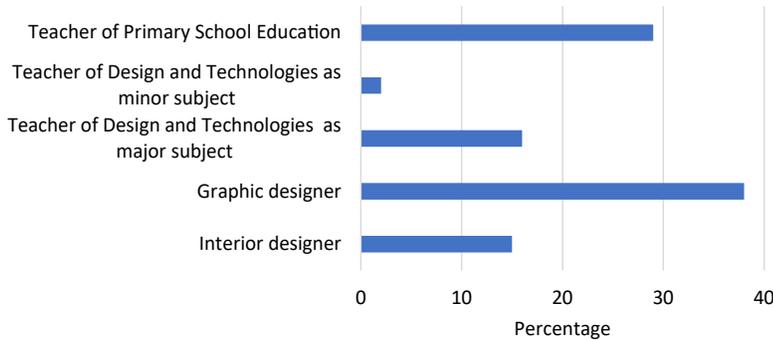
Figure 1. Respondents' study programmes (*n* =126)

In addition to secondary education, many respondents also had additional education, both formal and informal. 30% of respondents have attended an interest education programme related to visual arts, 21% of respondents have attended a vocational art school, 14% of respondents have taken courses, and 13% have studied in art studios. However, it should be noted that a significant number of respondents (37%) have not received additional education (see Figure 2).
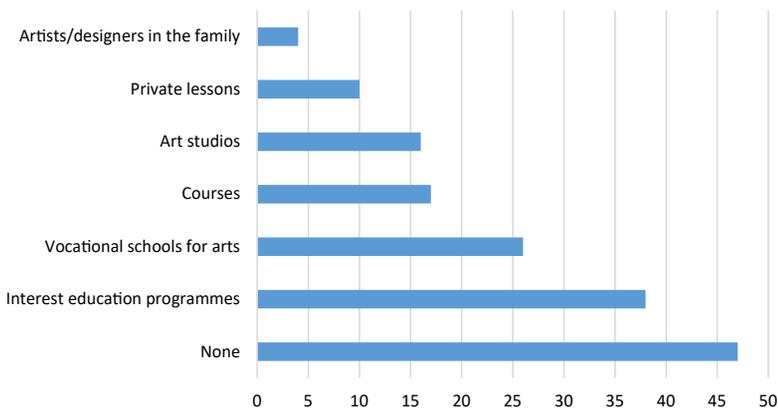
Figure 2. Additional education of respondents

Results

RQ1: What is the sketching experience of students in visual arts and home economics and technologies in general education?

Given that sketching is a compulsory skill in the new curriculum, it is important to find out about students' experiences. A total of 17% have sketched often or very often in visual arts, and 30% sometimes. Almost a fifth of respondents (19%) have not sketched at all in visual arts (see Figure 3).

Compared to sketching in visual arts, sketching is less frequently taught in lessons on home economics and technologies. Only 10 respondents, or 8%, say they have learnt it often or very often, while 48%, or almost half, have not learnt sketching at all in these lessons (see Figure 3). This means that sketching needs to be given a special place in design and technologies teaching methodologies, as some future teachers do not have this experience themselves.
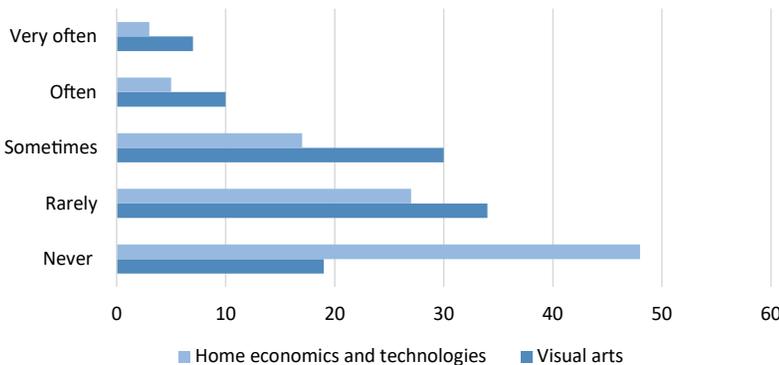
Figure 3. Frequency of sketching in visual arts and home economics and technologies (*n* = 126)
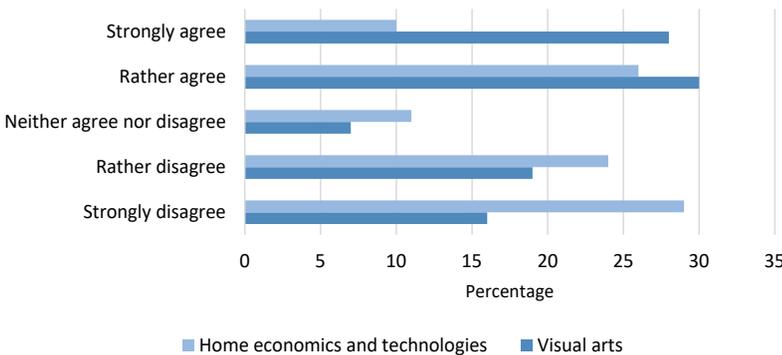
Figure 4. Variety of graphic materials in visual arts and home economics and technologies (*n* = 126)

For a more varied sketching experience, it is recommended to use different graphic materials and grounds. 58% of respondents have experienced using a variety of graphic materials for sketching in the visual arts, while 35% have not used a variety of graphic materials. In home economics and technologies, only 36% of respondents have used different graphic materials for sketching, while 53% have not (see Figure 4). This implies that the variety of graphic materials, especially in design and technologies teaching methodologies, also needs to be addressed in the study process. The responses show that a variety of sketching grounds is used comparatively less than a variety of graphic materials. In the visual arts, 38% of respondents indicate that they have used a variety of sketching grounds, while 52% have not. In home economics and technologies, 27% of respondents have used a variety of grounds, while 63% have not.

In addition, only 28% of respondents say they have studied artists' sketches in visual arts, while 24% have studied artists'/designers' sketches in home economics and technologies.

RQ2: What is students' understanding of what sketch and sketching are?

In response to the open question "What is a sketch?", most respondents (60%) consider a sketch to be a rough draft (see Figure 5), e.g., S22 writes that "a sketch is a draft of the real work." In addition, just over half of the respondents (52%) write that a characteristic of a sketch is that it is quickly done. For example, DT13 writes that it is "a quick implementation of ideas on paper." 43% associate sketching with drawing techniques. For example, S14 defines a sketch as a drawing "from which a work of art is made." Respondent M61 writes: "A sketch is a quick drawing." 21% of respondents associate sketching with sketching an idea, e.g., DT12 writes that a sketch is "a representation of your idea on paper." 12% of respondents associate sketching with sketching subjects/objects. M61 thinks that "a sketch is a draft of things, objects or people, mostly of a small size."
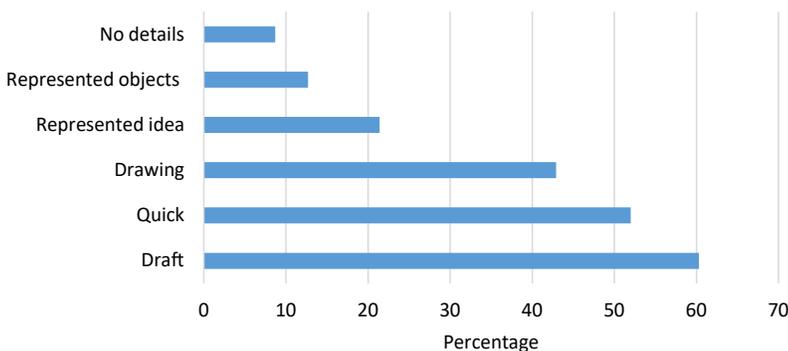
Figure 5. The most common answers to the question **"What is a sketch?"** (*n* = 126)

Only a few respondents mention specific materials (pencils, felt-tip pens, etc.) (5%) and the means of expression (8%) used in the sketch, including line, colour, proportion, silhouette, shape, etc. For example, M15 describes a sketch as a drawing "in pencil/felt-tip pen/drawing pen." M25 writes: "A sketch is a rough draft of a drawing made over a short period, in which the shape, proportions, composition and, in some cases, shadow/lighting can be determined."

The majority of respondents believe that there are differences between sketching by hand and sketching digitally, with 61% saying definitely yes and 26% saying rather yes (see Figure 6).
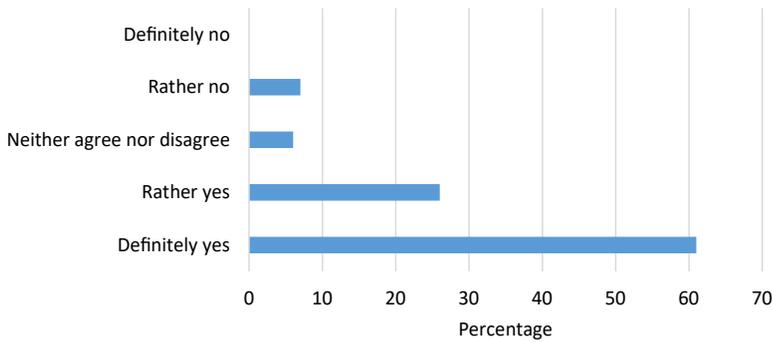
Figure 6. Differences between sketching by hand and digitally as perceived by respondents ($n = 126$)

RQ3: How and what do respondents sketch daily?

Most respondents sketch by hand (96%) in their daily lives, while 2/3 of all respondents sketch digitally (66%). 37% of respondents sketch by hand often or very often, and 11% of respondents sketch digitally often or very often (see Figure 7). Sketch notebook has been used by 2/3 of respondents.
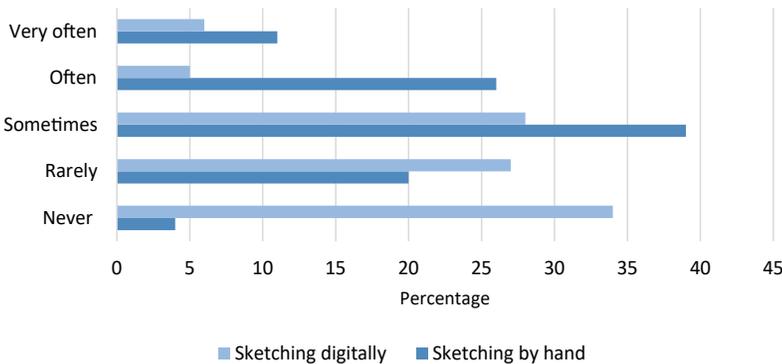
Figure 7. Frequency of sketching by hand and digitally in respondents' daily life

When asked what they sketch, many respondents (73%) tick the option "free sketching in different situations". A large majority of respondents (65%) sketch to visualise ideas for artworks. Just under half of respondents sketch to explore nature and the subject environment, and to create sketches for different products. 39% study the artworks – stylising them or making creative compositions, and 33% sketch artworks to copy them. 31% of respondents sketch connections while listening to a text. A relatively small proportion of respondents (18%) sketch on a template provided (see Figure 8).
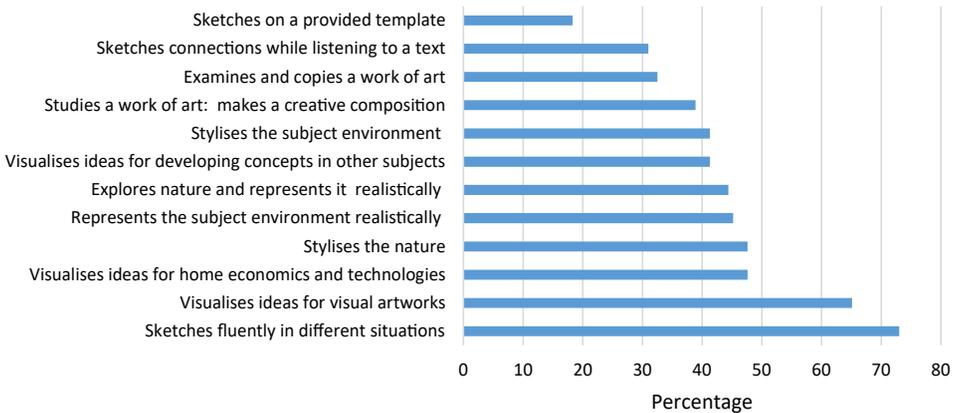
Figure 8. What do students sketch daily? (*n* = 126)

Most respondents produce monochrome sketches (92%) in a single technique (63%). In contrast, polychrome sketches (45%), as well as sketches in several techniques (44%), are made by slightly less than half of the respondents.

Most respondents sketch design products to visualise ideas (88%), slightly fewer students sketch to choose between several ideas (75%), and 65% sketch to experiment. This suggests that in the study process more attention should be paid to experimental sketching and the possibility of variations in sketches.

RQ4: How do students understand the importance of sketching?

Students' motivation and understanding of the worth of sketching are important. A convincing majority of respondents agree (77% strongly agree and 21% rather agree) that it is necessary to learn to sketch by hand to be able to visualise their ideas. Similarly, the majority of respondents rate sketching as something to learn to be able to record their observations (69% strongly agree and 26% rather agree).

Most respondents (around 3/4) agree that the amount of work put into sketching determines both the overall quality of the design product and the speed with which a design product can be produced. 17% of respondents neither agree nor disagree that the amount of work put into the sketch depends on the quality of the overall design product. 15% of respondents neither agree nor disagree that the amount of work invested in the sketch depends on the speed with which a design product can be produced. This means that it is necessary to think about how to motivate students to sketch design products.

86% of respondents answered the question "What would you like to add about sketching by hand?" (see Figure 9), which shows that respondents are not indifferent to sketching.
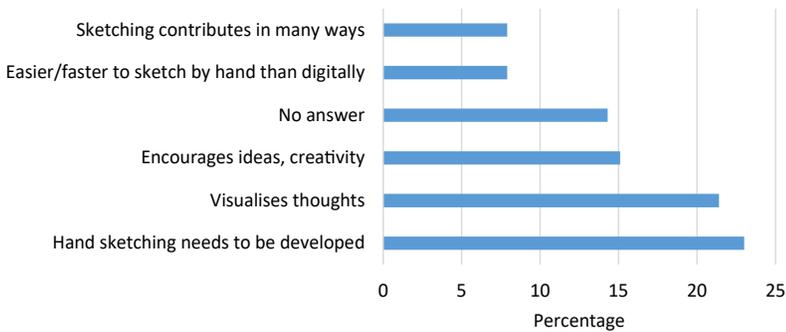
Figure 9. What would respondents like to add about sketching by hand? (*n* = 126)

23% express the opinion that sketching skills need to be developed, e.g., respondent DT5 writes: "I think sketching skills should be compulsory at school as part of design thinking." 21% of the respondents to this question think that sketching is useful for visualising ideas. For example, respondent M32 points out that sketches "help to visualise and plan ideas." 15% emphasise that sketching generates new ideas. For example, respondent M12 says: "Sketching gives ideas that don't just come to mind." 13% of respondents associate sketching with sketching objects or the environment, e.g., M8 indicates: "A quick sketch of an object/landscape etc. A drawing that includes the main details. 1–10 min." 8% of respondents believe that sketching contributes in many ways to personal development, including the development of thinking and memory. For example, respondent DT9 writes: "Developing drawing/sketching skills makes people more creative, better able to structure their ideas and thinking, better able to explain them to others, and better able to accentuate key and secondary details."

8% of respondents say it is faster and easier to sketch by hand. For example, respondent M42 thinks that sketching by hand "is a faster way to work than

doing it digitally." 2% of respondents stress the opposite view. Respondent M7 writes: "I like [sketching] with digital tools better than by hand because of the ability to erase."

Discussion

The results of the survey show that the students have different sketching experience, which was gained in the general education school. In general, there has been a greater variety of sketching tasks (different graphic materials used and different grounds for sketching) in visual arts than in home economics and technologies. However, 35% of respondents in visual arts also did not have a variety of materials for sketching and 7% neither agreed nor disagreed with this. This is directly related to respondents' understanding of sketching, as when defining a sketch, 43% of respondents associate sketching with drawing techniques. This is also in line with the understanding of the term 'sketch' proposed by several authors (Ceylan & Soygenis, 2022; Pistone, 2002).

Students consider that there is a significant difference between sketching by hand and sketching digitally, with a higher percentage of students using sketching by hand. The highest percentage of students sketch freely in different situations. 31% of respondents sketch commonalities while listening to a text, this supports research that 1/3 of people are strongly visual-spatial (Silverman, 2002). There is a noticeable correlation between the fact that more students have learned sketching in the visual arts, as more respondents use sketching for visualising ideas for artwork than for visualising ideas for design products. Students' previous experience can also be related to the fact that a higher percentage of students appreciate the need to sketch to visualise ideas and record observations than the effort put into sketching design product ideas to influence the overall quality and development speed of the design product.

23% of students especially appreciate the need to learn to sketch and emphasize it when answering the question of what else they want to add. The results of the research show that it is necessary to pay more attention to sketching in the university for future designers and design and technologies educators. It is especially necessary to pay attention to the variety of sketches (the variety of techniques and materials used) and to create tasks that focus on both observation and idea sketching, as well as experimentation in the sketching process.

The results of the study cannot be generalized due to the small number of respondents, but they are valuable for future studies on learning sketching in the study process.

Conclusions

The study answered all four research questions.

Regarding RQ1 on students' previous experience, the study showed that respondents have different sketching experiences before their university studies, which calls for a differentiated approach at university. The sketching experience has been influenced by both the comprehensive school and additional educational opportunities.

In general education, respondents have sketched more frequently and differently in visual arts than in home economics and technologies. This is because sketching has been traditionally more associated with visual arts than with product design.

When the term 'sketch' is defined, it is often associated with drawing, and this is also reflected in many students' understandings of what sketch and sketching are (RQ2). Books written by artists and designers, on the other hand, offer a wide range of materials and techniques to use. This means that students need to be shown a variety of possibilities, including the possibility of creating sketches in appliqué, collage, painting, and other techniques.

Responses related to the RQ3 about students' daily sketching habits show that sketching by hand plays an important role in respondents' creative and professional self-expression. This is shown by the respondents' attitude towards the survey: even when answering the question allowing for non-response, 86% of the students submitted answers. Most respondents sketch freehand in different situations and visualise ideas for visual artworks, which is directly related to the fact that at school sketching is taught more in visual arts than in home economics and technologies. 37% of respondents sketch by hand often or very often, 39% sometimes, 4% never and the rest rarely. Overall, respondents sketch more often by hand than digitally.

Respondents appreciate the importance of sketching (RQ4), as almost all agree with the statement that sketching is necessary to visualise ideas and record observations. In response to the question "What else would you like to add?" 23% say that sketching needs to be developed.

Overall, the results show that the role of sketching in general education has been undervalued. New educational standards in Latvia and curriculum reforms have changed the official framework, but the teaching of sketching skills in each school will depend on individual teachers. Therefore, preparing future teachers for a fulfilling job is a very important motivation for changes in the content of university curricula. The study revealed key aspects that need attention when designing and developing new tasks for teaching sketching. It should be noted that the role of sketching in the professional activities of future graphic and interior designers will not diminish either. Techniques and tools may change, but the need to visualise ideas will not disappear.

Aknowledgment

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Integrating Computational Thinking into Classroom Practice: A Case Study

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ABSTRACT

Recent educational developments have seen increasing attention attributed to Computational Thinking (CT) and its integration into school curricula. This has brought along a series of challenges for teachers integrating CT into their practice. The study presented in this article explores the journey of a Maltese secondary school teacher in his efforts to integrate CT within the context of a Math club. The teacher participant was recruited from the Malta EU Codeweek summer school, a pilot initiative that stemmed from the EU Codeweek's Train the Trainer programme carried out during summer 2021. The qualitative methodology involved a case study research, with data collected from an online discussion forum, interviews with the participant teacher as well as an analysis of the teaching material developed by the teacher. The results shed light on the CT aspects that were used to scaffold the teaching of mathematical concepts and highlight the challenges and obstacles that the teacher encountered in his integration efforts. The discussion proposes that non-formal learning environments, such as in-break activities, can serve as test-beds for CT integration and emphasises the need for CT to be introduced much earlier on in Maltese schools. Ultimately, this study can substantially help inform further research and practice around the integration of CT in classroom practice.

Keywords: Computational Thinking, EU Codeweek, formal and informal learning settings, K-12, Mathematics education

Introduction

The importance of Computational Thinking (CT), or "the new literacy of the 21st century" (Wing, 2006) cannot be understated in the field of education. As computationally enabled technological advances invade and reshape essential components of our everyday lives, the set of competencies offered by CT are seen to possess the potential of helping our young generations to move from

being consumers of technology towards using the technology to create new forms of expression, build new tools and foster creativity (Barr & Stephenson, 2011; Grover & Pea, 2013; Mishra et al., 2013).

CT involves a set of abstract thinking skills that draw on concepts fundamental to Computer Science (Wing, 2006). These skills represent a "universally applicable attitude and skill set" (Wing, 2006, pg. 33) that should be part of the repertoire of every child's analytical ability and thus should constitute a vital part of school learning. This notion has influenced a number of educational movements which have recently attributed increasing attention to CT and its integration into modern curricula.

In fact, the introduction of CT concepts and practices has been formally recognised by many institutions across the world (Duncan et al., 2017; Bocconi et al., 2018; Pears et al., 2017). Malta is no exception, with a strategy underway for all students from Kindergarten to Year 11 to "understand and apply the fundamental principles and concepts of computational thinking" (Catania, 2014, pg 15).

However, despite this increased attention towards CT and the wide range of curriculum strategies and other initiatives, the integration of CT into the curriculum is still facing a range of issues and challenges (Voogt et al., 2015; Angeli & Giannakos, 2020). Including CT practices in and of itself offers little guidance for teachers about what aspects of CT to include in their practices, and how. In this study, the focus is on the integration of CT into classroom practice by exploring the teaching experience of a Maltese secondary school teacher in his efforts to plan, develop and integrate CT within the context of Mathematics lessons as part of an in-break Math club. The research study endeavours to answer the following main research questions:

- What aspects of CT are characterised in the planning and delivery of mathematical concepts?
- What are the major challenges and obstacles experienced in integration efforts?

Defining CT and its components

Wing (2006) initially highlighted CT as broadly revolving around designing systems, solving problems and understanding human behaviour by drawing on computer science concepts. Later, she refined this definition to encompass the thought processes involved in framing problems and their solutions in ways in which computers could understand and execute (Wing, 2010). Just like proficiency in language aids communication, Lu and Fletcher (2009) define proficiency in CT as a means to "systematically, correctly and efficiently process information and tasks" when dealing with intricate problems.

CT broadly consists of a number of thinking processes which include abstraction, algorithm design, decomposition, pattern recognition, and data

representation (Wing, 2006). Similarly, Kalelioglu et al., (2016) developed, from a systematic review of the literature, a framework for CT that focuses on the processes of abstracting and decomposing, analysing data and recognising patterns, algorithmic thinking, implementation, evaluating and generalising. Ultimately, despite the range of views that have emerged over the years about what components truly constitute CT, there seems to be a set of universally accepted CT elements, which include abstraction (Lee et al., 2011; Wang et al., 2014), decomposition (Grover & Pea, 2013), algorithmic thinking (Atmatzidou & Demetriadis, 2016; van Borkulo et al., 2021) and generalization (Angeli et al., 2016; Selby & Woollard, 2013), among others.

Mathematics and Computational Thinking

The importance of CT skills, and their relevance to various learning and critical problem-solving contexts has been widely supported (Council, 2010; Wing, 2006; Barr & Stephenson, 2011). This is particularly true in Science, Technology, Engineering and Mathematics (STEM) fields (Lee et al., 2020), where research seems to show positive correlations between the use of CT in these areas of discipline (Orton et al., 2016; Weintrop et al., 2016).

The link between CT and Mathematics more specifically, has its roots in the work of Papert (1980) who argued that using programming environments to teach Mathematics allowed students to learn concepts in a more meaningful way. It does seem that recently, the integration of Mathematics and CT has been mainly focussed on programming (Hickmott et al., 2018) or involved a software tool or hardware device (Barcelos et al., 2018). Underlying these integration efforts are beliefs about higher-order skills that are identified as common between the two fields (Barcelos & Silveira, 2016). Weintrop *et al.* (2016) propose a definition for CT in high school Mathematics (and Science) in the form of a taxonomy with the aim to bring current educational efforts up-to-date with the increasingly computational nature of these subjects. Much of these integration efforts have been triggered by the formal acknowledgement of the importance of CT in Mathematics by important entities. The OECD's new Programme for International Student Assessment survey (PISA) have recently introduced aspects of CT into their framework (OECD, 2018), while the Next Generation Science Standards (NGSS) have also listed the use of Mathematics and CT as one of eight distinct scientific practices (NGSS, 2013). These have served to highlight the promising opportunities for fostering CT skills that help promote learning and problem-solving in mathematical activities that are aligned with existing curricula. Recent empirical studies indicate a positive correlation between CT and mathematical achievement (eg. Sáez-López et al., 2019; Psycharis & Kallia, 2017). Other qualitative studies have also portrayed positive results in how CT could be employed to engage students meaningfully towards possibly improving

a wide range of mathematical abilities (eg. Pei et al., 2018; Sinclair & Patterson, 2018; Gadanidis, 2017). Despite all this, a scoping review of the literature by Hickmott et al. (2018) indicates that there are still gaps in the knowledge of CT as integrated in Mathematics K-12 education. Among the gaps identified is the lack of empirical studies that offer relevant practices and hands-on advice to educators for bringing together mathematics and CT. This paper addresses these gaps by adding to the list of empirical studies that inform research on the possible methods that can be used to integrate CT into mathematics in an informal school setting.

Moreover, the practice of embedding CT into mathematics lessons is a complex and challenging endeavour, and does not in itself guarantee a successful complement of the use of CT to advance the understanding of the various mathematical topics. In fact, many teachers have a lack of awareness of how CT skills can be incorporated into their teaching practices (Sands et al., 2018; Looi et al., 2020). To complicate things further, teachers have also reported barriers to their integration efforts which have posed further challenges in terms of time management, support from school leaders and access to technology amongst others (Morreale et al., 2012; Pollock et al., 2017).

The local context

In Malta, plans for integrating CT across the curriculum may be underway (Catania, 2014), however there is very little or no evidence at all in most curriculum content that mentions CT aspects or their integration. One of the known direct references to CT is in the ICT C3 syllabus (this is the compulsory ICT syllabus for years 7 to 11), where a very brief direct mention of CT can be found. There is also very little or no CT content in local teacher education programmes. This points to a scenario whereby CT and its integration largely happens in vacuumed pockets by scattered enthusiast teachers who may have followed specific courses, like the EU Codeweek summer school, as was the case with the participant teacher in this study. In terms of Mathematics, Malta generally places poorly in the league of nearly 80 countries when it comes to PISA testing, especially in Mathematics (Schleicher, 2018). Consequently, the need for the integration of CT as described above, with all its promising aspects and challenges, are seen to be as relevant and much needed in Malta as they are elsewhere.

Methodology

Background to the study

In the summer of 2021, academics from University of Malta collaborated with members from the national Maltese Digital Literacy department on the organisation of the EU Codeweek summer school. Recruitment for this initiative happened

through calls for participation posted on teachers' groups on Facebook. A total of 20 teachers participated in the initiative, the outcome of which was to guide participants to formulate a plan to integrate CT into their own individual practice for the ensuing academic year. Following the summer school, a call for participation went out to the participants to invite them to collaborate with members from the University of Malta on the implementation of their proposed plan. This was done through a presentation about the proposed research which was carried out during one of the sessions of the EU Codeweek, where information was provided to all participants on what participation in the research would entail. Paul (a pseudonym) was one of the three summer school teachers who opted to collaborate in the study. He was interested in participating and opted into the research after reading further about the project from the information and consent form letter presented to all potential participants. This study thus presents Paul's attempt at integrating CT and Mathematics into his classroom practice over the academic year 2021-2022. His personal ambition was to ultimately enhance the integration of CT across the general mathematics curriculum, however, he decided to initially start on a smaller scale, with a Math club. The reasons for this were multifaceted, involving both issues to do with teacher mastery of CT integration into Mathematics as well as curricular constraints pertaining to the amount of content to be covered for exams, perceived lack of time and other limitations.

Details of the Math club initiative

The Math club was planned to be Paul's educational space to implement his action plan for CT and Mathematics integration.

A total of 28, 45-minute sessions were held once a week, during break times, between the months of October 2021 and May 2022.

Students, recruited from the middle school in level 6 to level 8 (10 to 12-year olds), were asked to sit for an aptitude test. The invitation to join the club was open to all students, and a total of 20 students showed interest and sat for the test. No grades were allocated for the final outcome. Instead, the scripts were separately vetted by four Mathematics teachers within the Maths department of the school. The result of this vetting process indicated that the academic level of students ranged from average to very high. This information was used by Paul to understand his target audience and inform his planning accordingly. Thus, all students were offered a place on the Math club, with 18 of these initially taking up the offer. After the first few sessions 5 dropped out, leaving a total of 13 students who attended regularly.

The 13 mixed-gender students consisted of five Level 6, four Level 7 and four Level 8 students. They all attended the sessions together and initially worked in groups within their respective grade level. There were however multiple

occasions during the Math club sessions where the students collaborated together in mixed grade level groups.

The Math club sessions were meant to provide the students with a space where to engage and indulge in CT in the context of Mathematics. Amongst the topics covered were *number systems, divisibility rules in Mathematics* and *prime factorisation.* Most of the time links were made to Computer Science topics, and programming in Lego, Scratch and Python also featured as part of the activities. While Paul had detailed initial plans, he was flexible throughout and was guided by the students' feedback and progress during the sessions. Paul constantly changed and adapted his plans for the sessions to offer students a more personalised experience that suited their needs and interests, while upholding their motivation. The setting was rather informal, unlike what the students are usually used to in the context of their more formal classroom settings. In fact, the Math club sessions were characterised by less strict rules, more opportunities to be creative and freedom to explore different learning trajectories. Paul employed a project-based approach, with his role shifting more towards a mentor who guides and supports the students rather than the more traditional style that is more predominant in formal lessons within the general school culture. The Math club culminated in a Maths Exhibition, organised by the Mathematics department, where the students had an opportunity to showcase projects they had collaborated on in the club. Furthermore, to reward the students for their hard work and dedication, Paul organised an escape room activity on the school grounds in June 2022, where the Math club participants had the opportunity to flaunt their CT skills to solve puzzles and questions posed by this activity.

Methods of data collection

In order to answer the research questions, this study was conducted as a single case study (Yin, 2014). This implies an in-depth investigation of the Math club intervention in its real-life context (Creswell, 2013; Yin, 2014). According to Yin (2014), a key strength of the case study research is the opportunity to employ a range of sources of evidence to support the study's construct validity. Unfortunately, due to COVID-19 restrictions, it was not possible for the researchers to physically be present in the classroom, however, this case study findings build on several sources of information, including forum discussions between the teacher and the researchers, semi-structured interviews, the teacher's resources used during the Math club sessions and pictures shared by the teacher of the students working, as well as pictures of artefacts created by the students as part of the projects they were involved in.

The asynchronous discussions, carried out using the Microsoft Teams platform, were active between September 2021 and July 2022. This online space was commonly used by the teacher and the researchers to communicate on

a weekly basis. Paul shared his ideas while planning and adapting the sessions and the researchers offered feedback and guidance throughout the design process. A discussion was also generated on a weekly basis that helped sustain a reflective process to evaluate the teaching and learning processes and inform adaptations of the design of future sessions.

The aim of the interviews was to collect in-depth data from the teacher about the progress of the integration process, as well as other aspects of interest that would emerge during the online discussions. The interviews also focussed on aspects identified by the researchers from their analysis of the resources used during the Math club sessions. Two forty-five minute interviews were carried out, one in December 2021 and another in June 2022. This was a time during the COVID-19 pandemic, when major restrictions were in place in Malta, therefore the interviews were held online via the Microsoft Teams platform. Both interviews were recorded with Paul's consent and later transcribed.

The pictures shared by the teacher were instrumental in supporting the other data sources during the process of analysis (Creswell, 2013). More specifically, the pictures of student's work and artefacts were jointly evaluated by the teacher and the researchers as they exemplified how CT was employed in the learning process.

Research ethics for this study was followed very rigorously and an ethics application for carrying out the research was approved by the Faculty Research Ethics Committee, FREC and the University Research Ethics Committee, UREC, at the University of Malta.

Data Analysis

Thematic analysis offers a flexible method for identifying, analysing and reporting patterns within the data. With the help of the qualitative research software Taguette, thematic analysis (Braun & Clarke, 2006) was used in this study to analyse all the data collected. Transcripts were coded based on two coding schemes: one focussing on the characteristics of CT emerging from Math club sessions, and the other with the aim of identifying challenges and obstacles in the teacher's integration efforts. The six-phase procedure based on Braun and Clarke (2006) involved starting to familiarise with the data, identify initial codes, then subsequently search, review, define and name the emergent themes, and ultimately produce the report.

Results

Data analysis resulted in the identification of a total of 4 themes and 15 categories, as portrayed in Table 1 and Table 2. The emerging themes shed light on how the teacher translated his understanding of CT into practice to deliver specific mathematical concepts and the challenges met along the way. Primarily, theme 1

in Table 1, referring to the connections established between CT and Mathematics, indicates that prior training about CT was crucial in helping the teacher become more aware of certain specific components of CT. Findings portray how these were then progressively linked to the teaching of Mathematics and subsequently further refined following feedback gained from practical experience. It was also clear that the teacher's own interpretation of CT, which developed and evolved throughout the study, heavily influenced the CT components which ultimately emerged during both the planning as well as the delivery of the Mathematics lessons. Furthermore, analysis of the second theme, about CT characteristics (theme 2, Table 1), indicates that decomposition was the CT component which featured more heavily in the integration efforts, followed by abstraction, pattern recognition and the use of algorithms. Finally, the themes emerging about the challenges and obstacles of CT integration point to a range of barriers met by the teacher. These include amongst others, issues around the context in which the learning was taking place, with informal contexts being identified as being more conductive to the integration of CT into practice over more formal educational experiences. Moreover, issues related to school environment and different methods of teaching were also found to be major contributing factors. The next section discusses these main findings.

Table 1. Themes and categories of characteristics of CT emerging from the Math club

Theme	Categories
1 – CT and Mathematics connection	Teacher experience, Teacher training, EU CodeWeek reflection, Professional development
2 – CT characteristics	Abstraction, Algorithm, Decomposition, Patterns, Students' prior exposure to CT

Table 2. Themes and categories of challenges and obstacles to CT integration

Theme	Categories
1 – Learning setting	Formal settings, Informal settings
2 – School environment	Curriculum constraints, Time constraints, School management and culture, Students' prior exposure to CT

Discussion

Making the connection between CT and Mathematics

The positive effect of training on CT received during the Malta EU Codeweek Summer School, emerged very prominently from the teacher interviews. Paul in fact recalled how following the training, he had become more conscious of CT and its components. He explains how, prior to the training, he would inadvertently use aspects of CT in his Mathematics classes. However, the training had helped him establish a better understanding of how the different aspects of CT could be translated to enhance his teaching of mathematical concepts more purposefully, as he explains:

> … *the training has helped me put things into perspective, and all the things I had read about before kind of fell into place and made more sense. The practical examples given by other educators during the training was also both very encouraging and enlightening!* (Paul, interview 2).

This highlights the need, as clearly emphasised also across the literature (eg. Angeli & Giannakos, 2020; Caeli & Bundsgaard, 2020), for teacher continued professional development (CPD), to ensure that integration efforts are well-informed and focussed on how best to amalgamate CT skills towards the enhancement of classroom practice. Unfortunately, Paul's CPD experience at his local school rarely met his needs in the classroom as he describes the CPD opportunities within his school as:

> … *being most of the time out of synch with the real demands of the classroom and only superficially addressing tangible needs* (Paul, interview 2).

Targeted CPD could help avoid unwanted situations whereby less experienced teachers might fail to address all relevant CT components in their integration efforts (Maharani et al., 2021) because of a lack of proper training. Ultimately, as identified by another one of the categories of this theme, teacher experience was instrumental in cultivating the link between CT and Mathematics. This clearly emerged during online discussions, where Paul was constantly revisiting and revising his teaching material and his plans for the Math club sessions based on feedback gained as he progressively became more in tune with new and improved ways of how to integrate CT. The analysis of his teaching materials also clearly shows how later versions of his work indicate a kind of greater maturity in his approach to integrating CT based on a better understanding of his own practice and the evolving needs of his students.

Meaningful training and a structured support system, such as that experienced by Paul in this study, are seen here as a crucial strategy that can be extended further in the local Maltese context to ensure better integration of CT across

the curriculum. Looi et al., (2020) also recommend involving teachers in co-designing CT enhanced curricula as a very effective way of promoting CT integration. Furthermore, given the importance of both CT as a "universally applicable attitude and skill set" (Wing, 2006, pg. 33), and the essence of teacher training, it is believed to be imperative that teacher preparation programs include elements of CT and how this can be included and integrated in the different subject disciplines (Yadav et al., 2017).

CT components and Mathematics instruction

Results from the study indicate that the most common CT component that prominently featured in both planning and delivery of various mathematical concepts during the Math club was decomposition. This was followed by abstraction, pattern recognition and the use of algorithms.

Decomposition was the major initial step that was noted as being used at the beginning of every problem explanation. The teacher would explicitly guide the students to

> … *look at the problem and dissect it and break it into smaller problems* (Paul, interview 1).

The prevailing aim at the start of every problem-solving session would be in fact to systematically look at a problem and find ways of decomposing it into a number of smaller, manageable pieces which they would then go on to solve individually. This CT component was also evident in graphical ways in some of the resources the teacher had planned, with visual representations of problems being broken down into smaller pieces. It may seem that the reason for decomposition being the most prominent aspect of CT that surfaced during planning and instruction would be that, as Selby (2015) notes, this is the most difficult aspect of CT. In addition to this, it can be considered as the first step in a structured problem-solving approach, and as The Royal Society (2012) notes, an indispensable skill to master before moving on to other CT skills. It is to be noted that the students who participated in the Math club had little or no background of CT. This, as previously explained, is because CT is not emphasised within Maltese curricula, despite efforts being made for its inclusion. In fact, apart from the ICT C3 syllabus, there is no direct mention of CT anywhere, and it would only feature in lessons where enthusiastic teachers would take their own initiative to integrate CT into their own practice. This may point to the fact that students may not be proficient in CT skills yet, so the need must have been to focus more on decomposition in order to master this before moving on to higher levels of CT skills required for the type of problem solving included in the maths problems presented during the club.

Along with decomposition, abstraction was also a component that the participating teacher used quite frequently in his delivery of mathematical concepts. In accordance with the literature (eg. Chaabi et al., 2019) the teacher considered abstraction as a key skill for both mathematics and CT. For him, abstraction was especially useful when encouraging students to sift details and information given in the problem brief in the process of working towards a solution. Many times, this involved translating the information given into a diagrammatic form which would better portray the problem. As the teacher himself expressed:

> *the sense of abstraction is about re-moving what is not necessary, and representing what you have visually to help in solving the problem* (Paul, interview 1).

On many occasions, especially when problems started becoming progressively more challenging over the course of the Math club, the teacher started introducing the concept of pattern recognition and the idea of

> *finding patterns and finding what is similar and what is repeating* (Paul, interview 1).

A study by Ling & Loh (2020) confirms the positive correlations that exist between pattern recognition and mathematical ability. In fact, in this study, the skill of pattern recognition was used by the participating teacher on multiple occasions as an additional strategy in his quest to help students with their next steps in their problem solving approach.

Finally, algorithmic thinking was the last component of CT that emerged from this study as part of the teacher's integration efforts. Algorithmic thinking was seen to bring all the problem-solving steps that the teacher was promoting with his students in order to come up with a

> *formula that you can apply in general terms, so if you are asked to scale up and say find the sum of all the natural numbers from one to 7 billion, you would be able to do it in a few seconds* (Paul, interview 1).

This highlighted the aspect of generalisation as an important component of CT (Kallia et al., 2021). As also explained in the study by van Borkulo et al. (2021), Paul approached the aspect of generalisation in both plugged and unplugged ways throughout the Math club. In some occasions, he also used the resulting algorithm to program the solution.

Ultimately, our study seems to suggest that, in accordance with the literature (Kallia et al., 2021), learning opportunities that integrate CT into mathematics instruction should highlight aspects of decomposition, abstraction, pattern recognition and algorithmic thinking amongst others. These form part of the problem solving approach that emerged quite starkly in both the planning as well as in the

delivery of mathematical concepts in our study. Furthermore, similar to the study conducted by Kallia et al., (2021) problem solving and all the thinking processes involved in it are regarded as common between CT and mathematical thinking. Similar to a study by Niemel et al. (2017), the participating teacher seemed to have a natural pre-disposition to associate CT with problem solving in maths very generally, and his basic underlying notions of CT in mathematics corresponded with his own ways of teaching mathematics (Huang et al., 2021). It can thus be concluded that these problem solving thinking skills were ultimately strategically employed in this study as a way to scaffold the understanding of mathematical concepts (Huang et al., 2021). This highlights the importance of including CT, and more specifically the aspects of decomposition, abstraction, pattern recognition and algorithmic thinking in mathematics instruction. It also highlights the importance of further research to identify other aspects of CT that may have not emerged in our study, but are evident in other studies, like data practices (Kallia et al., 2021), logic and logical thinking (Grover & Pea, 2013), and testing and debugging (Weintrop et al., 2016) amongst others.

Barriers and Challenges faced by teachers

The fairly successful integration of CT into mathematics education carried out during the lessons for this study, led the teacher to identify a number of challenges and barriers which in one way or another he had to struggle with during his integration efforts. The CT literature supports this aspect as it consistently identifies barriers and challenges to implementation efforts, which include access to resources, concerns with timings and school support (Morreale et al., 2012; Pollock et al., 2017). In this study, the integration experience during the in-break club served to highlight issues encountered during the teacher's formal teaching of mathematics lessons. The main concern encountered seems to highlight a correlation with the context in which the instruction was taking place. In fact, the teacher frequently compared instruction in the Math club to his other mathematics lessons and confessed:

> *I would say I'm more successful, because I am free to push the boundaries further in the Math club, because it is an extra-curricular activity" and also "In the Math club I can afford to scratch their head deeper* (Paul, interview 2).

On the other hand, the formal lessons were characterised with quotes like:

> *I am stressed about the syllabus. I share classes with other teachers and I am concerned when, for whatever reason, I fall behind…and with the whole COVID-19 situation, that has happened quite often lately. There-fore, I always have the syllabus at the back of my mind.* (Paul, interview 2).

It is interesting to note that, unlike findings experienced in other studies (eg. Morreale et al., 2012; Pollock et al., 2017), in this study, the school where the teaching was taking place provided the teacher with enough flexibility to adapt and shape instruction in ways deemed effective by the teacher. Furthermore, the Paul also reported a great degree of support provided by the school in backing these initiatives. Nonetheless, it was evident that the teacher's aim to provide students with opportunities to develop their CT skills and encourage students to internalise these skills to become a natural habit of thinking and part of their general repertoire of problem solving skills, was far more successful in the informal rather than in the formal setting. The main issues, as also identified by (Google Inc. & Gallup Inc., 2016), were those of competing curriculum priorities and the resulting concern over lack of enough time prevailing in the formal setting. Research that focuses specifically on the positive affordances that CT yields in informal settings can be found in the literature (eg. Ehsan et al., 2018, 2019; Rehmat et al., 2020). However, it is argued that, in order to better understand some of the specific barriers and challenges that the integration of CT may be faced with in formal settings, more research is needed to be able to compare and contrast these two important contexts. It is duly acknowledged here that integrating CT only in in-formal settings may lead to the exclusion of some students and thus promote inequitable learning outcomes. It is thus proposed that the use of informal settings may prove to be ideal for teachers as pilot projects, which can then be potentially rolled out to the wider formal setting.

Another challenge which the teacher identified in his integration efforts was the low-level of CT skills that the students were equipped with, compared to their age level. This deterred, to some degree, the progression of the acquisition of the various mathematical concepts, because the acquisition of CT had to come first and this, the teacher felt, resulted in time taken away from purely mathematical instruction to focussing on upskilling the students. This is attributed to the fact that the students have been exposed very little, or none at all to CT competencies, in their previous schooling experiences in the local Maltese educational context. In conclusion, the academic literature clearly confirms that the acquisition of CT skills can be successfully acquired in early childhood (Bati, 2021), and furthermore, this highlights the importance of introducing these very important skills at a much earlier stage in the educational experiences of students.

Conclusion

This study presented an investigation of the integration of CT into mathematical practice. Results shed light on a range of different aspects that shape the reality of teachers, who like Paul, believe in CT and strive to integrate it

into their everyday practice. From a local Maltese perspective, it is argued that even before taking the plunge to integrate CT into Mathematics instruction at a secondary school level, preliminary measures need to be taken to ensure that the proper foundations have been laid out. This refers to both making sure that the students have the basic fundamentals of CT to allow them to thrive, as well as ensuring that robust structures are in place to support teachers in their integration efforts. Following the implications of the learning context presented in this study, it is recommended that informal settings may be ideal for piloting and experimenting with integration efforts until teachers are confident enough and achieve mastery of CT strategies. It is however crucial that integration efforts do not stop at the boundary of informal settings and that every effort should be made to understand, acknowledge and try to overcome the existing challenges in order to transcend into the wider formal settings.

In conclusion, we argue that given the current-socio economic trends and needs emerging from our modern society, CT training should be a core component of teacher-training education as well as an important on-going component of teacher professional development. Finally, it is also strongly recommended that the integration of CT should start early on in the schooling experience, as this would enable students to internalise the skills from a young age and be further empowered to use these through a range of interdisciplinary subjects more meaningfully through-out their learning experiences.

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Primary School Mathematics Education Curricula in the United States and Latvia

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ABSTRACT

Mathematics and its related competencies are used consciously and unconsciously in many of life's everyday activities regardless of the country or geographical location, policies, social, economic or political situations. The abstract language of mathematics is understood throughout the world but is learned in a variety of different types and levels of institutions of learning. An everchanging globalized world prioritizes the need for mathematics. Therefore, the mathematics taught in school should give an understanding of mathematics and the tools to use mathematics effectively in new situations. It is common today that many countries are re-evaluating and revising their education system's standards for mathematics teaching, recognizing the changing needs of the work force and society. Within the framework of a project implemented at the Faculty of Pedagogy, Psychology and Art at the University of Latvia, one of the main priorities of which is to promote the exchange of academic staff and cooperation in training future teachers, it was possible to evaluate and compare mathematics curricula in both countries. The aim of this paper is to do a preliminary analysis of the content of the basic education curricula in Latvia and U.S., focusing specifically on geometry and measurement, and seek data about the impact of the Standards on learning. The study, using document analysis, reviews the competency-based approach taken in Latvia's Skola2030 (School2030), and compares it to the Common Core State Standards, implemented in the U.S. A review of the similarities and differences in the content and sequencing is explored. Reviewing the mathematics content in both countries showed more similarities than differences in geometry and measurement. The study looked at not only the mathematical content of the standards but also the approach both countries' standards take in developing students' conceptual understanding of primary mathematics to promote mathematical literacy for all students.

Keywords: content, curricula, mathematics education, mathematics standards, primary school

TO BE OR NOT TO BE A GREAT EDUCATOR, 2022 **619**

A. CIRULIS, I. HELMANE. Primary School Mathematics Education Curricula in the United States and ..

Introduction

Many processes connected to education change along with societal shifts. Accordingly, laws and regulations regarding mathematics education are affected by educational, philosophical, and political positions. Mathematics teaching is often regulated by some form of a governing document through a curriculum or a set of standards (Ernest, 1991; Niss, 1981). Stakeholders in this process have a great interest in seeing the intentions behind the standards or curricula influence learning outcomes (Ellsworth, 2000; Boesena et al., 2014). Regardless of the country or geographical location, policies, social, economic or political situations, countries are reevaluating and revising their national standards for mathematics education, recognizing the changing needs of the work force and society. Latvia and the United States, as many countries worldwide, have sought to improve the quality of their education systems, especially in the STEM fields. Many countries have updated their standards or curriculum guidelines to promote systemic changes in their respective compulsory education programs. As examples, in the U.S. Common Core State Standards (Common Core State Standards [CCSS], 2010) were developed, but Latvia introduced its new mathematics program School 2030 (Skola2030, 2018).

In order to assure the effectiveness of new standards, these curriculum guidelines need to be designed and developed within evidence-based instructional practice, monitoring progress and making data-informed instructional decisions (Fuchs & Fuchs, 2007; Rinaldi & Samson, 2008). Traditional curriculum focused little on the practices of doing mathematics but rather on mathematical structures: notions, concepts, theories, methods, and results (Hoffmann, 1989). During the 1990s changes emerged. Recently developed curricula aim to clarify the relationship between mathematical content and practice and make the development of sound mathematical practice an explicit curricular goal (Boesena et al., 2014):

> *Every researcher, every producer of mathematics will readily admit that mathematics is an activity* (Freudenthal, 1991, p. 14).

The classroom or other learning space is no longer a place where the teacher imparts his or her knowledge to students who are expected to listen passively to the teacher and wait for him or her to tell them what to do. In modern times, it is expected that students are active participants in the learning process (Bada, 2015). Today's student needs to change from a passive participant in the learning process, who quietly listen to the teacher's narration, to an active participant in the learning process, who brings with his own learning experiences and approaches to learning (Rajendra, 2019; Thompson, 2015). Teachers need to recognize that mathematics and mathematics teaching must be dynamic (Machisi, 2021). Many educators agree that the mathematics classroom must be

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an environment that gives students the opportunity to be actively involved in learning, not just passive receivers of information. Thus, in documents regulating and determining educational processes, including standards and programs, it is necessary to specifically include language that promotes the active involvement of students in learning mathematics. It is thus worthy to ask how standards differ in content and structure. A closer analysis of similarities and differences may lead to discovering paths to improvement in both countries.

Methodology

The aim of this paper is to do a preliminary analysis of the content of the basic education curriculums in Latvia and U.S., focusing specifically on geometry and measurement, and seek data about the impact of the standards on learning. The study was conducted between January 2022 and August 2022.

International assessments, like the Trends in International Mathematics and Science Study (TIMSS) provide opportunity for countries to identify strengths and areas of improvement in curriculum. This study compared primary school mathematics standards in Latvia and the United States in the context of the 2019 4th grade TIMSS results. Overall achievement on the TIMSS assessment has increased over the years in both countries and both are doing well by international comparison. In 2019 Latvia ranked 10th best in 4th grade mathematics while the United States was 15th of 58 countries. Content domain specific results are shown in Table 1 (Mullis et al., 2020).

Table 1. Trends in International Mathematics and Science Study (Mullis et al., 2020)

Country	Average Score			
	Total	Number	Data	Measurement and Geometry
Latvia	546	547	542	548
United States	535	542	533	520

Reviewing the content domains overall, Latvia and the U.S. had similar scores in Number and Data, but the largest difference was found in Measurement and Geometry (Table 1). Based on this, the focus of this study was placed on this content domain. The difference between the score in Measurement and Geometry was significantly different than the overall mathematics average scale score for the U.S., indicating an area for improvement.

The study, using document analysis, selected the basic education curricula for mathematics currently used in the United States and Latvia (Table 2). Documents that meet the following criteria were selected for the document analysis: intended for primary school education, define mathematics content and learning outcomes, and are issued in the period from 2010 till 2022. The curricula were analyzed by

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using content analysis as a research method. The learning outcomes tables was structured to illustrate the document content and describe the different relationships between learning outcomes that make up the text.

Table 2. Analyzed Mathematics Curricula

Title	Publisher	Year	Country
Mathematics 1.–9. grade	National Centre for Education (VISC)	2018	Latvia
Regulations Regarding the State Basic Education Standard and Model Basic Education Programmes No. 747	Cabinet of Ministers	2018	Latvia
Common Core State Standards (CCSS)	National Governors Association for Best Practices and Council of Chief State School Officers	2010	U.S.

Standards alone cannot change what is taught. Real changes to what is taught and how it is taught is dependent upon implementation of new standards. While it is impossible to say with absolute certainty that they are, standards that are reflected in student textbooks are a strong indication that to some degree the standards are implemented. Research has shown that textbooks play a major role in determining what is to be taught and the experiences students encounter (Gene, 2018). Textbooks are a tool that translate standards into classroom interactions. They are a resource that are used to provide opportunities to master the knowledge and skills that have been identified as important by the education system. Textbooks have been found to strongly affect teachers' instruction in multinational studies (Valverde et al., 2002).

To begin the study, three popularly used U.S. textbook series were chosen as claiming to adhere to the Common Core State Standards (CCSS, 2010). The textbook series included:

- Common Core Progress Mathematics published by Sadlier School,
- McGraw-Hill MyMath published by McGraw-Hill,
- EnVision Mathematics published by Scott Foresman.

The individual textbooks for 1st through 4th grade for each series were reviewed to ascertain the presence of content for each standard. It was found that this was indeed the case with few exceptions. Thus, it can be reasonably assumed that many schools in the United States are actually teaching material required by the standards at that grade level. In Latvia, the Ministry of Education and Science, which certifies that a textbook adheres to the country's current standards, examine textbooks. While Latvia's current standards were revised and adopted in 2018, the 2006 standards are predecessors to the current standards

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and appear in textbooks used throughout the country. The mathematics textbooks for primary school included different publishers:

- Mathematics 1st – 3rd grade published by Lielvards,
- Mathematics 1st – 3rd grade published by Zvaigzne ABC,
- Mathematics 1st – 3rd grade published by Petergailis.

The Latvian standards are actually law governing the education system. The United States has for the most part adopted the Common Core State Standards (CCSS, 2010) but it is not law. The CCSS were sponsored by the National Governors Association and the Council of Chief State School Officers. In the United States, the regulation of schools is governed by state or territory legislature, not the federal government. Thus, states had the option to adopt or reject CCSS. Over 40 states and territories adopted Common Core since its release in 2010 as its fundamental document for guiding what children in grades K-12 learn and grade level goals in mathematics and English (CCSS, 2010).

The current standards for both Latvia and the United States were reviewed for overall structure and mathematical content in first through third grade. It is important to note that Latvian school children begin 1st grade at age 7, while American children at age 6. Thus, it was appropriate to also review 4th grade for American content. The focus was on the geometry and measurement standards of both countries. Measurement was limited to measurement associated with geometry; length, area and volume.

Results

Reviewing the mathematics content in both countries show more similarities than differences in geometry and measurements. The United States Common Core State Standards (CCSS, 2010) do not specify how the content is to be taught or the sequencing of the material. Integral to CCSS are the first eight Mathematical Practices Standards. These standards are overarching over all content and considered to be an essential part of what it means to be mathematically literate. They include:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning (CCSS, 2010).

Mathematics learning standards in Latvia and the adopted program School 2030 (Matemātika, 2018) are more numerous and are more precise and detailed

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in their descriptions and stress both knowledge and skill goals. School2030 (2018) includes both a suggested sequencing of each major topic as well as methodological commentary. The learning content in mathematics is organized according to the Big Ideas (*Lielās idejas*) that the student has to acquire in order to develop common understanding about the surrounding world and oneself in it. The big ideas form the structural framework of the compulsory learning content. Requirements for the acquisition of the learning content or the learning outcomes that the pupil has to attain finishing the particular stage of education are described according to these big ideas: mathematics language; strategies and reasoning in mathematics; numbers, operations with numbers, algebra and functions; shapes; data and statistics (Matemātika, 2018). The learning outcomes are defined both for each theme in the learning content and the respective educational three-year period, finishing Grade 3, 6 and 9.

The standards in both countries state specific learning goals but the Latvian standards give a more precise and detailed description of desired learning outcomes. For instance, the learning outcomes for geometry in the Latvian standards and accompanying program divide geometry into categories that encourage solving practical problems and encourage students to form conclusions about shapes and space:

- shapes and their components and properties;
- position of figures in a plane, in space and their mutual position;
- equality and similarity of shapes;
- movements and transformations of shapes in the plane (Regulation No. 747, 2018).

It specifically delineates skills and gives emphasis to conceptual understanding. Latvian standards contain much more material for the teacher. It could be argued that the verbosity may hinder some but gives more detailed information and guidance to those who seek it.

Table 3 below gives an abbreviated version of the Measurement and Geometry standards for Grades 1–3 regarding mathematical content for both countries side by side. Similar standards were grouped side by side for comparison. The table includes the action words used in each standard, emphasizing student engagement. The U.S. 4th grade standards include: convert linear units of measurement; apply area and perimeter formulas; recognize and draw parallel and perpendicular lines, angles and symmetry.

To ascertain whether there were connections between differences in standards and differences in achievement, individual TIMSS test questions were examined. TIMSS releases only a small number of test questions. In Measurement and Geometry, three questions were released from the 2019 4th grade study. One item is classified as an Intermediate International Benchmark of Mathematics Achievement item, while the other two are Advanced (Mullis et al., 2020).

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Table 3. Results of Geometry in 1st Grade, 2nd Grade, 3rd Grade

Grade	Mathematics by School 2030 (2018) Latvia	Common Core State Standards (2010) U.S.
1st Grade	**Compose** 2-d and 3-d shapes from smaller shapes **Compare** lengths **Compare** attributes of various shapes **Draw** shapes with straight-edge and free-hand **Measure** lengths **Divide** shapes into two and four equal pieces	**Compose** 2-d and 3-d shapes from smaller shapes **Compare** lengths, order 3 lengths **Distinguish** defining attributes of shapes Build and draw shapes with defining attributes **Express** a length by unit lengths **Partition** 2-d shapes into 2 and 4 equal pieces
	Build 2-d and 3-d shapes with stick-like materials **Recognize** symmetry in figures **Draw** symmetric images **Group** shapes by properties **Decompose** shapes in various ways **Make** ethnic straw ornaments **Recognize** congruent shapes **Duplicate** by drawing a given shape on graph paper **Draw** lines of given cm length	
2nd Grade	**Name** polygons **Draw** shapes with given properties **Cover** shapes with given shapes **Decompose** shapes in different ways, discuss all possibilities **Divide** rectangles into equal squares and other figures in different ways **Divide** a figure into 2 equal parts different ways	**Name** polygons **Measure** lengths using different units and measuring instruments **Estimate** lengths **Compare** lengths **Recognize** and **draw** shapes with specific attributes **Partition** a rectangle into same-sized squares and count total **Partition** circles and rectangles into 2, 3 and 4 parts **Recognize** that equal shapes of identical wholes need not have the same shape
	Compose 3-d shapes from cubes **Describe** shapes from various perspective **Draw** given cm or mm length **Mark** halves and quarters of a segment **Compute** perimeter **Find** area as covering by a given number of unit squares **Draw** rectangles with given perimeter or area on graph paper	

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Table 3. Continued

3rd Grade	**Measure** lengths using different units and measuring instruments **Estimate** lengths **Compare** lengths **Recognize** and **draw** shapes with specific attributes **Partition** a rectangle into same-sized squares and count total **Partition** circles and rectangles into 2, 3 and 4 parts **Recognize** that equal parts of identical wholes need not have the same shape	**Understand** concept of unit square and area **Measure** halves and fourths of an inch **Measure** area by counting and multiplication of side lengths, connect these concepts **Decompose** areas into smaller areas **Find** perimeter of various shapes **Exhibit** rectangles with the same perimeter and different areas and different perimeter and same area **Understand** classes of shapes can have common attributes **Draw** quadrilaterals that do not belong to special subcategories **Partition** shapes into parts with equal area
	Explore different types of angles **Make and draw** shapes with given angles or sides **Describe** and **identify** faces, edges, vertices **Make** 3-d shapes with stick-like materials and with nets **Explore** nets of solids **Build** right rectangular parallelepipeds with cubes **Make** 2-d scale drawings of real-life objects **Compute** volume of right rectangular parallelepiped by counting cubes	

Intermediate test question 1.11.1 asks students to draw the symmetric image of a 2-dimensional shape. Results show that 89% of Latvian 4th graders correctly answered the question while only 60% of students in the United States. The international average on this item was 70%. Latvian students scored significantly better than the average while U.S. students significantly lower (Mullis et al., 2020).

To help explain this large achievement gap, we note that in Latvia, School 2030 (Matemātika, 2018) introduces symmetry in 1st grade. Students are asked to recognize reflective symmetry and draw the image for themselves. In contrast, Common Core State Standards (2010) introduces the idea of symmetry in 4th grade but does not specify that students should actually create the image themselves but rather to simply identify the line of symmetry. While symmetry in primary school standards can be argued as non-essential, it shows the importance of standards in student learning.

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Another difference was the inclusion of describing shapes from various perspectives in the Latvian 2nd grade standards. This is not included in U.S. standards through 4th grade. It should also be noted that Common Core State Standards (2010) does not mention drawing lines of a certain length to be a goal, but rather just to measure. This skill is specifically mentioned in School 2030 (Matemātika, 2018). Several content differences become apparent also in 3rd Grade. For example, another goal in the Latvian Standards is to make scale drawings of real-life objects.

Advanced question 1.13.2 asks students to fill a 6 × 6 cm square using multiple copies of three different shapes: 3 × 3 squares, 2 × 6 rectangles and 6 × 6 right triangles. Students need to identify how many copies of each of the three shapes are needed to cover the square. On this question, the percentage of Latvian students who answered the question correctly was almost double the U.S. students (31% vs 17%) (Mullis et al., 2020). In this question again Latvian students scored significantly better than the TIMSS average while U.S. students significantly lower. Latvian standards pay specific attention to the concept that equal parts may not have the same shape.

In advanced test question 1.13.3 students are shown three-dimensional shapes and asked how many triangles and squares faces they see in each shape. Latvian students scored significantly lower than the international average with 22% of students answering the question correctly. Students in the U.S. did better on this question with 25% answering correctly which is below the international average of 27%, but not significantly (Mullis et al., 2020). This slight advantage might be due to the emphasis the U.S. standards place on identifying, rather than building for themselves.

Conclusions

- Mathematics standards can have varying degrees of importance in regards to oversight by governing institutions. The Latvian standards are law governing the education system and the United States has for the most part adopted the Common Core State Standards but it is not federal law. The level of detail and components of the standards also vary.
- Both countries standards address not only the mathematical content that should be mastered at each grade level, but also emphasize the opportunity for students to be actively involved in the mathematics acquisition process.
- Minor differences appear in geometry and measurement between the standards of Latvia and the U.S. There are differences in the sequencing of geometric content as well as skill acquisition.
- Textbook adherence to standards in Latvia is certified by the government, but there is no such oversight in the U.S.

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- While these differences may appear small, focus on such nuances could help both countries improve test scores and most importantly help their students gain a better understanding of mathematics.
- Reviewing results on international assessments such as TIMSS points out the importance of the standards and even the wording of standards, indicating that well thought-out changes to standards can have an impact on student knowledge.

Aknowledgment

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The Development of Numeracy Test Using Three-Dimensional Framework to Assess Numeracy Skills in Grade 7

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ABSTRACT

A growing body of evidence including international level studies (e.g. PISA, TIMSS) demonstrate that numeracy skills (also known internationally by other terms such as mathematical literacy) is crucial for a person's educational achievements and for informed and participatory citizenship. Early and successful interventions to improve students' numeracy skills lie in developing and using valid and reliable diagnostic tests for numeracy skill assessment. This study explored how developing a numeracy test based on three-dimensional framework could be used for numeracy diagnostic purposes in grade 7. To achieve this, initially a three-dimensional numeracy framework based on

1) content knowledge of mathematics,
2) information literacy skills,
3) complexity levels of SOLO taxonomy, was prepared.

Then the framework was used to construct a 32-item numeracy test assessing the ability to use relationships, functions and numerical information in different contexts including science. Next, the instrument was administered to 7th grade students ($N = 205$) in four schools who were asked to complete 3 hour-long tests. Such diagnostic data could inform teachers on students' numeracy skills and prepare instructional materials that target specific weaknesses in class level. Further, such information could inform personalized student learning instruction and produce improved numeracy diagnostic tests for future use.

Keywords: diagnostic assessment, numeracy skills, test development, test validation, three-dimensional framework, SOLO taxonomy

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Introduction

An understanding of mathematics is central to a young person's preparedness for participation in and contribution to modern society. A growing proportion of problems and situations encountered in daily life, including professional contexts, require some level of understanding of mathematics before they can be properly understood and addressed (Organisation for Economic Cooperation and Development [OECD], 2022). One of the key factors in the development of education systems is the availability of increasingly frequent, accurate and detailed feedback mechanisms at different levels of decision making (Csapó & Szendrei, 2011). Tools specifically for diagnosing students' math or science skills, do not measure the students' ability to transfer their math skills in different contexts. It is this transfer that characterizes students' deep thinking and high performance. Such tasks cannot be completed without a degree of cognitive effort, and the underlying conceptual ideas must be engaged with. Higher-level demands mean procedures that require connecting meaning with mathematical operations. A task requires the doing of mathematics when complex thinking is required (Smith & Stein,1998). When mathematical skills are used in different contexts, the term numeracy is used. This study focuses on the development of a reliable and useful diagnostic instrument for measuring students' numeracy skills that is based on a three-dimensional framework. This includes how students cope with various representations of linear functions and solve real life tasks where the mathematical model is a linear function or ratio and proportion in various contexts, including science. The aim of the study is to find out to what extent the different contexts affect students' numeracy performance and what can be concluded about students' ability to use math skills in different situations.

Definition of numeracy

Numeracy is the ability, confidence, and willingness to engage with quantitative or spatial information to make informed decisions in all aspects of daily living (Numeracy Progressions, 2021) Numeracy is not about being able to flexibly use all of mathematics to deal with "life's diverse contexts and situations", but rather to flexibly draw on that subset of mathematics that is most useful in dealing with these "diverse contexts and situations" (Liljedahl & Liu, 2013). Other authors defined numeracy as "ability or tendency to reason critically about quantitative information" (Gittens, 2015). A numerate individual has the confidence and awareness to know when and how to apply quantitative and spatial understandings at home, at school, at work or in the community (Numeracy, 2017). Numerate individuals have "the confidence and competence in using numbers which will allow individuals to solve problems, analyze information and make informed decisions based on calculations" (Curriculum for

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Excellence, 2009). Numeracy is generally seen as some combination of mathematical knowledge, tools, and dispositions, and to be numerate means to be willing and able to use this knowledge, tools, and dispositions across a wide variety of contextual situations (Goos et al., 2013).

A growing body of evidence including international level studies (Programme for International Student Assessment [PISA] or Trends in International Mathematics and Science Study [TIMSS]) demonstrate that numeracy skills are crucial for person's educational achievements and for informed and participatory citizenship. Numeracy skills are also known internationally by other terms such as mathematical literacy. It is more common to use the term numeracy in countries, such as the UK, Canada, South Africa, Australia, and New Zealand. Other names, such as quantitative literacy or mathematical literacy, are used in the USA and elsewhere (Geiger et al., 2015).

In the case of mathematical literacy, PISA is designed to assess if students can make use of their mathematical knowledge in life related contexts as a measure of their readiness for their active participation in society (Geiger et al., 2015). Numeracy emphasizes the use of analysis, inference, interpretation, explanation, evaluation, as well as reflection on one's own reasoning process (metacognition and self-regulation) (Gittens, 2015). The term numeracy assessment is usually used when talking about the assessment of the abilities of adults. The OECD Programme for the International Assessment of Adult Competencies (PIAAC) defines numeracy as the ability to access, use, interpret and communicate mathematical information and ideas, in order to engage in and manage the mathematical demands of a range of situations in adult life and numerate behaviour involves managing a situation or solving a problem in a real context, by responding to mathematical content/information/ideas represented in multiple ways (OECD, 2022).

Learner's learning towards conceptual understanding should be ensured through a process of continuous and comprehensive evaluation (Behera, 2021). In the 7th grade most of the number operations have been learned, so it is important to diagnose the ability to use these operations in different contexts before moving on to abstract mathematics. The authors chose the topics "ratio and proportion" and "function" because they are widely used in other contexts, for example in science. Therefore, they meet the criteria to be able to evaluate students' numeracy skills. They fit in one of four key areas of mathematical content, information and ideas that are covered by the numeracy assessment in PIAAC "Pattern, relationships and change" (OECD, 2022). The use of mathematics alone, without a context, cannot be seen as a numeracy activity. Thus, context is at the heart of numeracy (Goos et al., 2019). When the skill of using ratio and proportion and function is used in a scientific context, we can confidently say that numeracy is being demonstrated.

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Ratio, proportions and linear function in mathematics and science

One of numeracy's four core dimensions is application of mathematical knowledge (Goos et al., 2019). In turn, teachers are being encouraged more and more to teach the Big Ideas of mathematics: one that links numerous mathematical understandings into a coherent whole. One of the Big Ideas is Proportionality: if two quantities vary proportionally, that relationship can be represented as a linear function (Charles & Carmel, 2005).

In order to be able to diagnose the ability to use ratios and proportions in different contexts, for example in science, it is essential to understand how a student develops understanding in this field. Proportional reasoning, a big idea from mathematics, requires a shift in student thinking away from additive thinking toward multiplicative thinking. This shift is not trivial and unless carefully addressed can lead to student misunderstandings of scale, relation and proportion. (Abramovich & Connell, 2021.) A ratio is a multiplicative comparison of two quantities or measures. A key developmental milestone is the ability of a student to begin to think of a ratio as a distinct entry, different from the two measures that made it up (Van de Walle et al., 2013). Proportion, a big idea from mathematics, is an equation with a ratio on each side. This requires ratio, another big mathematical idea, to be at least partially understood prior to beginning work with proportions (Abramovich & Connell, 2021).

Proportional thinking is developed through activities involving comparing and determining the equivalence of ratios and solving proportions in a wide variety of problem-based contexts and situations without recourse to rules or formulas (Van de Walle et al., 2013). At the simplest level, proportional reasoning, whether involving ratio or proportion, relies on the ability to use multiplicative thinking rather than additive thinking. In other words, instead of describing a relationship between two quantities as being larger by three or smaller by five, the relationship would be described in terms such as triple the size, one fifth the size, four times greater, etc. (Abramovich & Connell, 2021). There are four types of ratios (Abramovich & Connell, 2021, Van de Walle et al., 2013, Musser, et al., 2016.):

1) Part-Part Ratios, where a ratio can relate one part of a whole to another part of the same whole
2) Part-Whole Ratios, which can also be used to represent comparisons of a part to a whole
3) Reflecting Quotients as Ratios can be thought of as a type of quotient
4) Reflecting Rates as Ratios in problems involving students per class, passengers per trolley, etc.

Ratios are extended to understanding and applying proportional reasoning (Van de Walle et al., 2013). Proportional situations are linear situations. Ratios are a special case of linear situations. Proportional quantities are the basis of

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many main concepts of science, such as speed, pressure, density, composition of mixtures of substances in chemistry, etc. Understanding measurements and unit conversions is crucial to performing any calculation in any field of science.

A three-dimensional framework for numeracy diagnostic instrument

For purposes of the numeracy diagnostic assessment, a three-dimensional framework has been developed (Burgmanis et al., 2021), which has foundations in several prominent previous studies and frameworks. The authors suggest that numeracy can be analyzed in terms of three inter-related dimensions:

1) Content of mathematical knowledge important for designing of the items;
2) Information literacy skills important to apply mathematical knowledge and skills in various contexts;
3) The complexity of student's performance to analyze and provide evidence on the structure of student's understandings and application of skills.

The first dimension of the framework "mathematical content" includes following categories:

1) quantity and numbers
2) ratio and relationship
3) data analysis and probability
4) measurement
5) space and shape
6) location and directions.

The second dimension of the framework is information literacy skills, which refer to ability of student to acquire, analyze, utilize and communicate mathematical knowledge in various contexts. The third dimension of the framework is complexity of student's performance. The authors of the framework use Structure of the Observed Learning Outcome (SOLO) taxonomy (Biggs & Collis, 1989).

Methodology

Participants

The diagnostic assessment instrument was administered using a sample of 205 7th grade pupils from four schools in Latvia. The sample of the study was selected using convenience sampling which is widely employed in the pilot test of an under-developed instrument. All pupils in 7th grade who attended the school on the days when the pilot tests were given completed the test and were included in the study sample. The sample of schools were representative and stratified by mathematics achievements (i.e., high, above medium, below medium and low achievement) of pupils from 9th grade in national level testing. Agreements were signed between the Rector of the University of Latvia, the municipality and the school, setting out the procedures for collecting and processing data for the

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study. This agreement was not violated during the study and the ethical standards of the study were respected.

Procedure

The study was carried out in two stages:
1) developing the numeracy skills tests based on a three-dimensional assessment framework that includes constructing items that target the specified attributes,
2) statistical analysis of data from test administration using item analysis and Rasch analysis.

The first stage of the study was to carry out an extensive study on the literature pertaining to diagnostic assessment, measuring numeracy skills and test development for the purpose of developing a numeracy skills tests based on a three-dimensional framework. The second phase included test administration in schools.

Instrument and item development

A three-dimensional framework was used to construct a 32-item numeracy test focused on the context category "ratio and relationship". It was divided into three parts:
1) Functions,
2) Ratio and Proportion,
3) Ratio and relationship in science.

The test items were designed to correspond to specific content of mathematical knowledge sections (Table 1). Correspondence of items in information literacy and complexity of students' performance is summarized in Table 2.

Table 1. Structure of the test: item correspondence with content of mathematical knowledge

The skill used in the item	Item
Use of different types of ratios	S_2.1.; S_2.2.; S_3.1.; S_3.2.; R_1.1.; R_1.2.; R_1.3.; R_1.4.; R_1.5.; R_1.6.; R_1. 7.; R_2.1.; R_2.2.;
Determine the unknown term of the proportion	S_1.2.; F_1.; R_3.1.; R_3.2.; R_3.3.;
Sees the relationship using a graph	S_1.1.; S_3.3.; F_4.1.; F_4.2.; F_4.3.; F_4.4.; F_5.;
Represent the relationship graphically	F_6.1.; F_6.2.; F_7_1.; F_7_2.;
See the relationship using a table or formula	F_2.; F_3.; F_7.3.;

Note. The name of each item is a code in which the letters represent the test in which it is included (F – Functions, R – Ratio and Proportion, S – Ratio and relationship in science), and the numbers represent the item number in the test.

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Table 2. Structure of the test: item correspondence to information literacy skills and level of performance complexity

	Unistructural	Multistructural	Relational and Extended Abstract
Acquire information	S_1.1.	S_3.3.; R_3.1.; F_4.1.; F_5.	F_4.2.; R_1.7.
Analyze information	R_1.1.; R_1.4.	S_3.1.; R_1.2.; F_1.; F_6.1.; F_2.; S_2.1.	R_1.6.; F_3.; F_7.3.; S_1.2.; R_3.2.; F_6.2.; F_4.3.; R_1.5; R_2.2.;
Utilize information and communicate	F_7.2.	R_1.3.	R_2.1.; S_3.2.; S_2.2.; R_3.3.; F_7.1.; F_4.4.;

The first two tests in mathematics and the third test in science were created based on the same framework with two groups of experts working separately. Each group of experts designed items, approbated in smaller groups of students and improved the tests during the development process. Next, the instrument was administered to students in grade 7 ($N = 205$) in four schools who were asked to complete the tests in 3 series each 1-hr long.

Data analysis

In this study Item Response Theory (IRT) was used to accurately examine a set of items that is measured. IRT is a collection of measurement models that attempt to explain the connection between observed item responses on a scale and an underlying construct (Cappelleri et al., 2014). Content validity was established by 3 experts. The Delphi methodology was used. Experts did a quantitative (scale 1–5) evaluation of items using two criteria: (1) item coherence with indicator, (2) item correspondence to specific level of SOLO taxonomy. The student completed tests were also evaluated by experts. Assessment calibration was done using the following procedure. 20 works were initially selected from each test and evaluated by several experts. The results were compared, and the reliability of the correction was evaluated. To evaluate the quality of items a Rasch model for the Partial Credit Model (Masters, 1982) was used. Previous studies show that Rasch techniques can be used to document and evaluate the measurement functioning of diagnostic instruments through analysis of item fit (Boone et al., 2013). For the statistical analysis the SPSS software version 26.0 and WINSTEPS version 4.6.2 (Linacre, 2015) was used.

Results

Students' performance in developed numeracy tests

The student results in each item were analyzed using a Rasch Wright Map (Figure 1). Since the item mean is one standard deviation higher than the person

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mean, it can be assured that the items were difficult and challenging for this group of students. Items above the mean value are more difficult than the ones below.
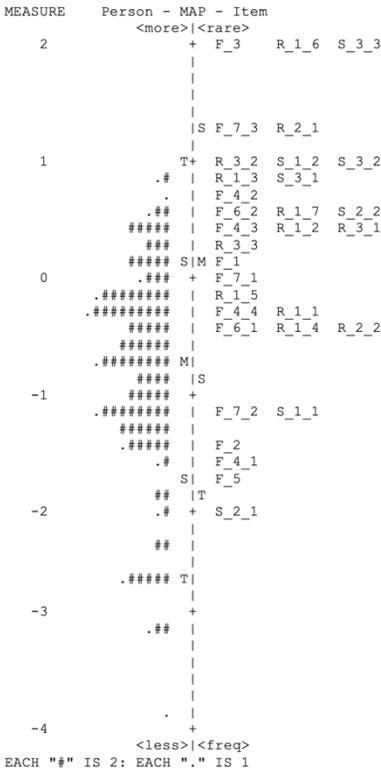
```
MEASURE     Person - MAP - Item
               <more>|<rare>
   2              +  F_3    R_1_6  S_3_3
                  |
                  |
                  |
                  |
                  |S F_7_3  R_2_1
                  |
   1             T+  R_3_2  S_1_2  S_3_2
           .#   |   R_1_3  S_3_1
            .   |   F_4_2
          .##   |   F_6_2  R_1_7  S_2_2
         #####  |   F_4_3  R_1_2  R_3_1
          ###   |   R_3_3
         ##### S|M F_1
          .###  +  F_7_1
      .######## |   R_1_5
     .######### |   F_4_4  R_1_1
         #####  |   F_6_1  R_1_4  R_2_2
        ######  |
     .######## M|
          ####  |S
  -1     #####  +
     .######## |   F_7_2  S_1_1
        ######  |
       .#####  |   F_2
          .#   |   F_4_1
            S|   F_5
           ##  |T
  -2       .#   +  S_2_1
                  |
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      .##### T|
                  |
  -3              +
          .##   |
                  |
                  |
                  |
                  |
            .   |
  -4              +
           <less>|<freq>
EACH "#" IS 2: EACH "." IS 1
```

Figure 1. Rasch Wright map

Students' numeracy performance in different contexts

The authors use the following procedure to select the items to be studied further. Three items in the science test have been selected. To cover a larger part of the construct, tasks are from different categories of information literacy (Table 2). Then two corresponding items from mathematics were selected for each of three science items, creating three sets of three items from the same construct field and the same mathematical skill used to complete the item. From the obtained data, students' ability to use mathematical skills in different contexts can be ascertained. In order to see how students make a transfer between different contexts, students' performance in selected items was compared using SOLO taxonomy where it was possible.

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Acquiring information in various contexts

Analyzing the students' ability to obtain information, 3 tasks with the same level of performance complexity were selected for deeper research. In item S_3.3. students select the appropriate relationship graph after being given a precise description in a scientific context. Students need to determine the direction of a graph of a linear function to match the given situation. A similar item is F_5. Only here students need to choose a schedule based on the values given in the description of the situation. In the third task F_4.4. the graph shows the path of a girl going home, where the distance depends on time. Students must be able to read from the graph where the halfway point is and in how many minutes the girl will reach it. In the first item, the context is considered scientific, in the other two, mathematical. Student performance in a science context differed significantly from using the same skill in a math context (Table 3).

Table 3. Students results of acquiring information in different contexts

Item and context	S_3.3. (Science context)	F_4.1. (Mathematical context)	F_5 (Mathematical context)
Correct answers, percentage	8%	65%	68%

Analyze information in various contexts

In the first item (S_1.2.) of this construct field, students have to use percentages in the calculation of proportional quantities. In the second item (R_3.2.), they have to see the relationship that connects the amount of fuel consumed and the number of kilometres travelled. Information must be obtained from the graph in the third item (F_4.3.) about the relationship between the distance travelled and the time spent, which is the velocity. The first item's context is scientific, the second is real- life and the third is mathematical. The maximum level of performance complexity in all items is multistructural. Collected data on the percentage of students whose outcome is at the unistructural and multistructural level is shown in Table 4. The performance of the other students can be evaluated at the pre-structural level.

Table 4. Students results of acquiring information in different contexts

Item and context	Unistructural	Multistructural
S_1.2 (Science context)	10%	5%
R_3.2. (Real-life context)	23%	2%
F_4.3. (Mathematical context)	12%	18%

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The results show that in the contexts of science and everyday life, most of the students operate at the unistructural level, which is different from the context of mathematics, where the number of students with answers at the multistructural level is significantly higher. This indicates that students have problems transferring between different contexts.

Communication in different contexts

In the following three items, the task is to mathematically justify a statement. In the science item, students must "explain choice using calculations". In item R_3.3. which corresponds to the real-life context, students need to write a "recommendation based on calculations of how much fuel Monika needs to fill up when going to visit her sister". In F_4.4. students have to describe a graph in order to justify the falsity of the statement.

It can be seen from Table 5 that students show low performance on relational and extended abstract level in all contexts. In the context of science most of the students performed at the unistructural level. In the context of mathematics, students performed relatively well at the multistructural level, but did not make the transfer to the relational and extended abstract level.

Table 5. Students results of communication in different contexts

Item and context	Unistructural	Multistructural	Relational and Extended Abstract
S_2.2. (Science context)	34%	8%	4%
R_3.3. (Real-life context)	19%	17%	8%
F_4.4. (Mathematical context)	19%	40%	5%

Discussion

Low students' performance in numeracy tests may have different reasons. To understand what those might be, it is necessary to analyze the experience of testing numeracy in Latvia so far, as well as the results of research in other countries. There is also a need to consider how numeracy is taught in schools.

The lack of pragmatic clarity as to what numeracy is, coupled with a lack of resources around this important construct, afforded the emergence of a more intuitive and grounded entry into numeracy (Liljedahl, 2015). For students to become numerate, they must engage with tasks that demand the use of mathematics in multiple contexts, and so effective numeracy instruction must take place in all school subjects, not just mathematics (Steen, 2001). It is therefore particularly important to measure the same construct in multiple subjects, as the three-dimensional framework is measured in mathematics and science in this study.

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Reason for the low results could be that no separate measurements of students' numeracy skills have been carried out in Latvia so far. When initially performing such measurements, students' results tend to be low (Liljedahl, 2015). In a previous study (Cao et al., 2022) on students' performance in numeracy in Vietnam one of the findings was low results on ability to apply mathematics knowledge and skills in everyday situations. Referring to authors (Cao et al., 2022) a significant reason for these results is the fact that students were still learning mathematics according to the old curriculum that was mostly based on mathematics content rather than the competency-based approach. Before implementing the new curriculum in Latvia, more attention in lessons and tests was paid to obtaining answers, not on how answers were obtained, decision and conclusions based on the obtained results.

This type of assessment allows feedback on performance at a particular point in time but does not give the opportunity to monitor students' progress. Norwegian researchers (Ræder et al., 2022) implement a vertical scaling design for existing assessment system. To keep track of how numeracy skills are developing, they use ongoing national assessments. Inspired by this further research could examine the possibility of linking the three-dimensional framework and national assessments in mathematics and science, looking for ways to track students' progress.

Conclusions

Analyzing the performance of the students in all three tests in general, using the Rasch Wright map, it can be concluded that this diagnostic tool was very challenging for the students and the performance of the students is low. No unequivocal relationship was observed between students' performance on the tasks and the cognitive depth of the tasks.

The three created tests, combining tasks in mathematics and science, give an opportunity to determine students' numeracy skills. They provide an opportunity to verify to what extent students can perform mathematical operations, and to what extent they can build the transfer of knowledge and skills in different contexts. The performance of the students included in the study in the contexts of science and real-life is lower than when using the same mathematical skills in the context of mathematics.

In any context, students demonstrate poor performance at the Relational and Extended Abstract level, which indicates the need to analyze the learning process and place greater emphasis on tasks with higher performance complexity.

Aknowledgment

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Maths Games without Frontiers

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ABSTRACT

The use of games in higher education significantly benefits cognitive, motivational, affective, and sociocultural perspectives. This paper describes a mathematical challenge for first-year STEM students at the "College of Merit Camplus", located in different cities in Italy from South to Nord, during the autumn of 2020 and 2021. Students in pairs play different puzzler games to reinforce mathematical prerequisites and basic knowledge. Due to the pandemic situation, non-digital games were forced to adjust to the remote environment. On the one hand, moving online was a challenge both from the organisational side and for the students that sometimes need to cooperate from different locations. On the other end, approaching the games remotely allowed students from colleges all around Italy to participate. The work describes and comments on each game in detail, considering the students' performance. In general, it can be stated that students liked the playful experience, although they found themselves not wholly confident with some topics and the related time restriction. These games, first-of-all helped review and train the basic concepts; therefore, the students have a better approach to studying the first Mathematical course at the University. They found the games' dynamics helpful in highlighting some simple tricks and common mistakes.

Keywords: Game based learning, Mathematics, Online challenge, Pair work, Playful environment

Introduction

Gamification and game-based learning are well-implemented approaches that foster cognitive development by increasing students' motivation and engagement through game elements within educational environments (Danniels & Pyle, 2018). While gamification is defined as using game features in a non-game setting, game-based learning identifies real games, usually on a digital platform, used for an educational purpose with a defined learning outcome (Plass et al., 2015). The level

of engagement and the social perspective of games makes them an ideal learning medium (Squire, 2011). In higher education, game-based learning is very effective as it increases enjoyment reducing anxiety with improvements in deep learning and higher-order thinking (Bawa, 2020; Crocco, 2016). Although the creation of digital games requires economic and time effort, the non-digital ones are cost-effective, require low administrative overheads, demand little or no prerequisite skills, and provide opportunities for enhanced social interaction (Mustafa et al., 2011; Whitton, 2012). Then, non-digital game-based learning suits mathematics' educational goals in higher education (Naik, 2017). Numerous applications are designed to be used directly in the classroom or for homework activities: card games, puzzlers, or strategic games (Lai, 2018; Lee et al., 2016). In designing a game, the five playful pillars should be considered to ensure cognitive activation (Zosh et al., 2017). Neuroscience studies show that people learn best from experiences that are joyful, meaningful, actively engaging, iteratively and socially interactive (Liu et al., 2017). Play requires an integrated approach based on creative, emotional, physical and social skills (Riley, 2013). The role of the teacher also has to be defined accordingly to the goal that wants to be achieved; it can span from free play to guided play to teacher-directed play (Weisberg et al., 2013)

Due to the COVID-19 pandemic, non-digital games have been pushed to shift to be played in a remote environment.

This study describes a mathematical competition that first occurred during the lockdown in the autumn of 2020. The games were originally the non-digital type but were adjusted to be played remotely. Thanks to this positive experience, the second edition in autumn 2021 replicated the same format. This online choice allowed the participation of students living in Camplus all over Italy.

The following section highlights the context in which the experimentation took place. The third section describes the methodology, while the fourth contains deeper details of each proposed game. Finally, a general discussion with the conclusion is given.

Context

The Italian educational system is organised into two cycles of training. The first education cycle lasts five years and consists of primary school from 6 to 10. There is no specialised path, and the goal is to acquire fundamental knowledge and skills in all subjects. The second education cycle lasts eight years and is divided into lower secondary school (from 11 to 13) and upper secondary (from 14 to 18). Like primary schools, the lower one is common to all students and shares a nationwide curriculum. Instead, the upper secondary is classified by the curricula as Lycée (general schools), technical institutes, and vocational institutes. The Ministry of Education defines basic curricula for all schools. Upper

secondary education is further classified into sub-paths, such as Scientific Lycée, Classical Lycée, Mechanical technical institute, or ICT technical institute.

Mathematics is a fundamental subject for all schools, but how it is taught could differ in terms of time per week and general goals.

This paper describes the experience "Math games without frontiers", which aims to support studying the first university Mathematics course for students from a Camplus college in Italy. The Ministry of Education recognises Camplus as a College of Merit offering residences and training for students. The training activities are compulsory and in addition to the university programs. It has different locations distributed throughout the Italian territory.

"Math games without frontiers" offers the opportunity to improve logic and calculation skills through playful exercises in a competition between couples of students and between the different Camplus locations. In five thematic evenings, various games are presented, and students are evaluated with an updated score.

Methodology

This paper follows the narrative case study with the support of qualitative research. The analysis includes the data related to the games (time and score), the in-field observations, and a final survey. The Camplus board ethically approved the current research, and each student signed a consent declaration, including a factsheet.

The challenge was open to all the first-year students living in one of the Italian Camplus and with at least a mathematical exam into the university's first year. The first edition involved 52 participants (15 females and 37 males) from 9 different colleges. In the second edition, there were 30 participants (14 female and 16 male) from 7 colleges. They autonomously group into couples within the same Camplus, with some exceptions in the first edition when two mixed pairs came from different Camplus. Due to the pandemic situation, the challenge was entirely run on an online platform. Each team was free to choose either to play physically or remotely together. A private instantaneous message channel between lecturers and each couple was established to collect the game's solutions.

Applying the game-based learning methodology, the games recall famous puzzlers to familiarise themselves with Mathematical basics contents. They are partially inspired by the work of Morando (2009) and further developed in order to be played remotely. The "Math games without frontier" foresees five meetings one hour long of playful scored activities. The events were one week apart and required some mathematical knowledge as well as some teamwork and strategy. In the edition 2020, the first three evenings worked on essential knowledge (elementary functions such as trigonometric, exponential, and logarithmic functions; equations and inequalities), while the last 2 reinforced the concepts

of limits and derivatives. In the edition 2021, the first two evenings worked on essential knowledge, while the remaining 3 reinforced the concepts of limits, derivatives, and integrals. The choice to include questions about integration was due to the comments on the final survey of the competition's first edition.

The day before each challenge, the scheduled games' rules and any printed material were made available to students. Each evening consisted of three different games made in various rounds. To maintain the students' concentration for the entire game session, the lecturers showed and discussed all the solutions at the end of the meeting. Each pair received their score during the week while they accessed their ranking position at the beginning of each evening. At the end of the experience, a winning team and a winning Camplus were elected and received a prize.

Games Description

The challenge includes different games that are now described. The chosen games are easily adaptable to various topics. For this reason, the same game can be played with different themes or rounds. Below are the basic rules used during the competition. Bonus scores are present in all games but in three other forms: time, fairness, and knowledge.

Labyrinth

The tutor reads ten true-false statements twice. Starting from the centre, answers define a path to exit the labyrinth; at each crossroad, a true answer matches the green star, while a false answer matches the red star.

Figure 1. Solution of a labyrinth round

Fig. 1 shows a possible path that starts with false, true, false, etc. When the reading ends and 30 seconds have elapsed, all the statements appear on the screen for 1 minute; the game ends 30 seconds later (a total of 120 seconds from the end of the reading). Teams gain 1 point for each correct answer, two bonus points if they submit within 30 seconds from the end of the reading, and one bonus point if they submit within 90 seconds from the end of the reading. The first submitting team gains another two bonus points.

Ordering

The game is divided into two rounds: in the first one, teams have to order eight values of trigonometric functions in ascending order, while in the second, eight values must be sorted in a decreasing manner. Each heat has a duration of 4 minutes. Each team has a "STOP" to indicate the point at which to end the sequence's validation. Teams have one extra minute for the sequence's delivery. Pairs gain 1 point for each correctly ordered sequence but get 0 points if the series order is wrong, even for a single value. Teams get two bonus points if the complete sequence is correct and delivered before time runs out.

Math Twins

A table of $12 + 12$ elements to be paired is given to each team. In 5 minutes, the team have to form as many pairs as possible, and within 1 minute, they have to send the complete list of pairs. Each team gains 1 point for each correct pair but loses 1 for each wrong couple. If all pairs are matched correctly, two bonus points are awarded. If the total score is negative, the team score equals zero.

Colouring puzzle

The game requires teams to blacken spaces of a figure in which there are the solutions of 15 mathematical expressions (for example, inequalities, equations or limits), see Fig. 2. The available time is 12 minutes. Once completed, the team has to send the photo of the obtained image to tutors.

Figure 2. Solution of a colouring puzzle

Suppose the figure is coloured correctly; the couple scores ten points. The team loses 1 point for each incorrect or missing box. The team gains two bonus points if the correct figure is delivered before time runs.

Treasure hunt

Each team has to solve a system of inequalities graphically; the goal is to identify the object constrained in the solution plane region of the system. Axes origin is assumed in the lower-left corner (see Fig. 3). The available time to complete the game is 5 minutes. Teams that deliver the correct object within 3 minutes gain ten points; couples that provide the proper object after 3 minutes earn five points. If the object is wrong, the team gets no points. Two bonus points are assigned to the first team that identifies the correct object.
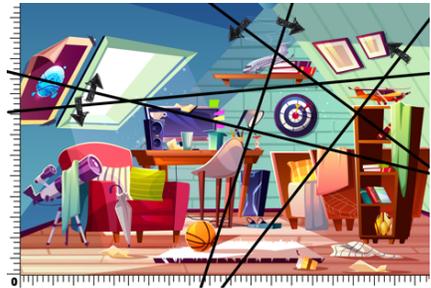
Figure 3. Treasure hunt scheme with the identified object (the target) [image: freepik.com]

Guess what?

Thirty plots of function are shown to teams. The tutor secretly chooses one between all figures. Couples can ask questions about a specific feature defined in advance, with yes or no answers, to guess the tutor's choice. Teams who think they have identified the correct function send a message to the tutors, and the game ends as soon as a pair correctly guesses. Each team has at most three attempts, and the game is played in multiple rounds. The team that identifies the correct function gains three points; the same team gains one bonus point if it identifies an admissible analytic expression within 30 seconds and two bonus points if it identifies two different expressions in $30 + 30$ seconds.

Target

A target made up of boxes is shown to teams. Each box contains one function. The game's goal is to reach the centre of the target by passing over each box at most once, starting from the pointed box. One can move from one box to another if the two boxes are adjacent and the functions follow a prescribed property (for example, Fig. 4 shows the case in which the rule is: the intervals of increasing monotony of two functions have a non-empty intersection).

M. G. BALLATORE, L. DAMONTE, A. TABACCO. Maths Games without Frontiers
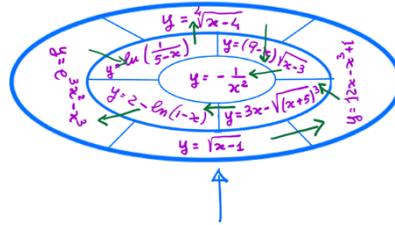
Figure 4. Solution of a target round

The available time is 7 minutes plus one extra minute for delivery. Teams gain 1 point for each correct passage between boxes. They earn one bonus point if they deliver within 7 minutes and gain another two bonus points if, for each box, they indicate the specific property (for example, the interval in which the function is increasing).

Sudoku

Each team has to solve a sudoku with some empty coloured dots (see Fig. 5). Each colour is associated with a definite integral. Solving them, they must place the numbers and complete the sudoku correctly. The available time to complete the game is 20 minutes plus one minute for the delivery.
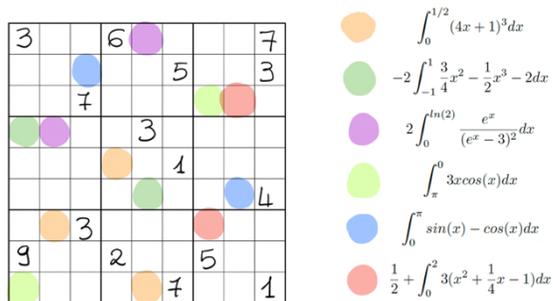
Figure 5. Sudoku example

Teams are asked to deliver the starting scheme with the integrals computed in order to obtain points: one point for each correct result within 10 minutes and 0.5 points for each proper answer delivered before the end. Six bonus points are gained by the teams that complete the sudoku within 15 minutes, five points within 20 minutes and 4 points if the solved scheme is delivered at the end of the time.'

Connect the dots

Each team must solve ten limits and, following the given order, use the solutions to connect the related dots (see Fig. 6).
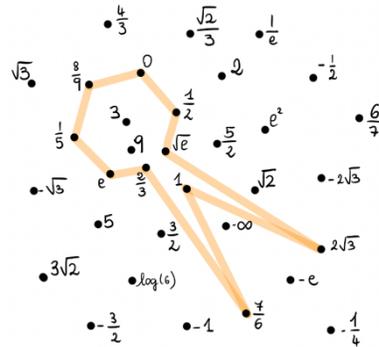
Figure 6. Solution of a "Connect the dots" game

The aim is to draw the secret image within 10 minutes. Each number correctly linked gives one point. The team receives two bonus points if it delivers the correct picture within 10 minutes.

Discussion and conclusions

Different observations can be raised considering the pairs' results in each game (scores and times) and the final survey results.

The Labyrinth game was played on three different evenings. The main difficulty was that answering T/Fs to a spoken sentence requires great initial concentration. Indeed, students are mainly used to solving mathematical problems by reading a written text. Therefore, in both editions, only a few teams delivered their solution on the first evening before instructions appeared on the screen. However, on the last evening, the number of couples who returned immediately after the end of the reading increased considerably. This denotes how the formalisation skills of a problem spoken aloud can be improved and reinforced.

The Ordering game was played only on the first evening but also highlighted a critical fact discovered in other games. Students are unfamiliar with trigonometric expressions and find it difficult to quantify them. In 2020, 75% of teams scored zero despite having the "stop" available. Similar results came out in the 2021 edition, where 50% of couples were unable to solve at least one of the two "ordering" games proposed. This suggests that many students still feel confident in the results, although they do not have a complete mastery of trigonometric functions. Therefore, this could explain why few have used the stop.

The Math Twins game confirmed students' difficulty associating the algebraic expression of a function with its graphs. The game was played on three different evenings, and each evening there was a different type of twins: trigonometric expressions and numerical values, functions and derivatives, functions and graphs. In the game, teams reached higher scores when the associations were not graphical. Conversely, scores are lower when students associated the graph

with the analytic expression; notice that almost 50% of teams scored zero in the first evening on both editions.

Scores of the other games suggest the same conclusions. In particular, the Treasure hunt game highlighted again that most students are unfamiliar with the graphical exercise's solution. Furthermore, a common fact of all games is the short time to complete challenges: quickly solving exercises requires a specific mastery of mathematics. Since the goals of this challenge are to develop the ability to intuitively visualise the graph of an analytic function and support preparation in differential calculus, these games suggest that more emphasis has to be devoted to the graphical part.

We introduced two new games in the second edition: Sudoku and Connect the dots. Regarding the Sudoku, only three teams were able to solve the integrals and complete the scheme. It seems that students made mistakes in calculating elementary integrals quickly. Then, when they got stuck on the sudoku, they did not realise that the error was on the computation of the integrals, not the scheme solution. Similar considerations can be drawn for the second added game. As before, the time limit seems a significant obstacle for students.

An important fact concerns the online procedure. Indeed, working online as a team was more complicated than the same work done in person. But on the other hand, it was possible to organise this challenge on a national basis only because of the online environment.

Analysing the comments from the final survey, it is clear that many students liked the playful experience. Moreover, most of them found it helpful and educational how the exercises were carried out: many games helped students understand "tricks of the trade". The limited time put teams in a healthy competition, making mathematics more challenging. In general, answers show that the students were satisfied and would like to continue with a new edition next year.

Author Note

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Fostering Teachers' Mathematical Competence in Problem Solving

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ABSTRACT

The problem of a growing shortage of qualified mathematics teachers, which is emerging in many countries today, is also quite acute in Latvia. Moreover, there are only few students in Latvia who want to study mathematics at a serious level and become mathematics teachers. A shortage of students and teachers is one of the reasons for the decline in the quality of mathematics teaching. Teaching and learning mathematics is impossible without understanding and problem solving, which, as noted by the famous mathematician Paul Halmos, is 'the heart of mathematics'. It is a well-known idea that by developing problem-solving skills, we learn not only how to tackle mathematical problems, but also how to logically work our way through any problems we may face. Unfortunately, this idea does little to contribute to a successful tackling of the teacher shortage, which is not a mathematics problem for which somebody can find a quick and easy solution. This article offers some research topics that may be useful for teachers working with their gifted pupils; deals with a non-trivial problem of constructing magic polygons on a triangular lattice, which is recommended as a research topic for teachers to encourage them and their students to better master different solution strategies and so-called big ideas in mathematics; the article also gives some insights into mathematics teacher training education in Latvia.

Keywords: polyforms, polyiamond, polyomino, problem solving, research topics, teacher shortage

Introduction

Nowadays we can hear more and more about growing teacher shortage problems all over the world (Lyons, 2021; McLean Davies & Watterston, 2022; Natanson, 2022).

The shortage of teachers in Latvia and the problems in education are indicated by headlines in newspapers, media and, of course, on the Internet. Here are English translations of some of the most striking headlines (2022):

- Teacher shortage in STEM subjects threatens Latvia's future,
- Where teachers disappear or the "black hole" of the Latvian education system,
- Schools face a shortage of teachers and the biggest shortage – mathematics teachers (A large number of teacher vacancies – 1,000 – have been announced.),
- Many schools face a catastrophic shortage of teachers ahead of the new school year (The number of vacancies has already reached around 2,000, so for many schools it will be impossible to find the teachers they need for September 1st and possibly longer. Many schools will therefore have to cope with missing lessons, merged classes and overworked teachers in the new school year.).

At the end of August 2022 on the website *esiskolotajs.lu.lv* we can find information about 35 free mathematics teacher vacancies and on *izglitiba.riga.lv* we can see that in Riga, the capital of Latvia, there are 20 mathematics teachers' vacancies in need to be filled. In addition, all this is right before the new school year starts. According to the Teacher Vacancies website, there are currently 40 mathematics teacher vacancies. The shortage of teachers in schools is a problem that has persisted for years. There are several reasons for this, based on a variety of sources:

- the low prestige of the profession,
- the unbalanced salaries and workload,
- the hasty introduction of new curricula without adequate provision of teaching resources,
- parents' attitudes, teacher burnout, emotional abuse by students and parents,
- teachers have responsibilities, but no rights to take firm action against those who bully the whole class,
- the inability of the Ministry of Education and Science (Latvia) to find timely solutions to several issues and ineffective communication is the reason why the problems have become so acute.

In Latvia, mathematics teacher profession can be obtained in the University of Latvia, Liepaja University and Daugavpils University. It should be noted that in 2022, the University of Latvia received only 17 applications for the Mathematics Teacher study programme. The other two universities offer the Mathematics Teacher Study Programme every second year, not every year, due to the low number of applications. To make matters worse, there are students who decide to drop out of university, a significant number of graduates do not go to work

in schools at all, and many future teachers are not sufficiently prepared to work with gifted pupils, to train them for mathematics olympiads or to supervise their research work. The quality of education is also affected by the fact that there are too many higher education institutions in Latvia, which significantly reduces competitiveness. Higher education institutions are trying to fill all budget places, first, but they do not have enough capacity to raise the quality of higher education. In 2019, Ilga Šuplinska, Minister of Education (from 2019 to 2021), emphasised that the number of higher education institutions in Latvia is not optimal, as evidenced, for example, by the fact that their infrastructure allows them to enrol around 160 000 students, but only 80 000 study.

The problem of teacher training and development has been an issue for many years. In Notices of the AMS (Wu, 1999) particularly emphasises that the only way to achieve better mathematics education is to have better mathematics teachers, and that "Any improvement in education must start with improvement of the teachers already in the classroom". To ensure that gifted pupils (future potential students at universities) are challenged enough we need to foster their teacher's mathematical competence in problem solving, so they can train and inspire their pupils to learn mathematics in greater depth. Although there are opportunities for teachers to develop their competence in school related topics by applying for courses, the courses that are oriented on developing more advanced skills (how to run mathematics clubs, how to prepare pupils for mathematics competitions, how to choose and develop appropriate research topics, etc.) are rare. That is why this paper mainly focuses on giving teachers some topics they can use to work at a higher level with the gifted pupils with a goal to supervise their scientific research.

Problem solving

Many of the commonly used terms, especially if they are non-mathematical, mean different things to different people. Albrecht, (2022) in her internet article notes "Problem solving is one example. The lack of a shared understanding complicates discussions at all levels, including national curriculum stoushes like the recent ones in Australia." This Internet article summarises different aspects of problem solving and provides important references such as, (Halmos, 1980; Polya, 2004), seminal paper of Alan Schoenfeld (Schoenfeld, 1992). To avoid ambiguity, let us clarify right away that we shall be dealing with mathematical problems, not routine school exercises, but non-trivial so-called challenging problems that can be useful as research topics for working with gifted pupils.

It is useful to know, that problem solving is the heart of mathematics. All the mathematics (theories, theorems, constructions etc.) we have now has been invented to solve some problems. Some of these problems might have come from

science, economics, or even real-life situations while others are purely mathematical. In (Halmos et al., 1975) it is written

> *The best way to learn is to do, (...) What mathematics is really all about is solving concrete problems. (...) A good teacher challenges, asks, annoys, irritates, and maintains high standards – all that is generally not pleasant. A good teacher may not be a popular teacher (except perhaps with his ex-students), because some students don't like to be challenged, asked, annoyed, and irritated – but he produces pearls (instead of casting them in the proverbial manner).*

Mathematics popularisers, those interested in recreational mathematics know that one of the best ways to capture the imagination of young people and get them interested in mathematics is by "hooking them" on irresistible problems.

In mathematics, there are a variety of topics (unexplored islands) that gifted pupils could make a new contribution to, which are not only unfamiliar only to them but also to their teachers. A gifted pupil may occasionally feel frustrated that his teachers themselves are not prepared to deal with such olympiad-level problems. You cannot teach what you do not understand. As Marilyn Burns write (Burns, 2007, p. 5) "teachers can't teach for understanding if they don't have a firm foundation of understanding themselves".

In Book Series: Problem Solving in Mathematics and Beyond, Volume 22, Seduced by Mathematics Pritsker (2021) presents a problem solving process consisting of 8 steps and gives some problems as an example for reader to better understand how these steps work and are carried out. He refers to the 1973 edition of Polya's book "How to Solve It", and it should be noted that this book, a bestseller, has many editions in different languages, the first edition having been published in 1945. Polya (2004) in page 1 of his book "How to Solve It" has written that "One of the most important tasks of the teacher is to help his students. This task is not quite easy; it demands time, practice, devotion, and sound principles." Generations of readers have relished Polya's – indeed, brilliant – instructions on stripping away irrelevancies and going straight to the heart of the problem. Polya identifies four basic principles for problem solving:

1. Understand the problem,
2. Devise a plan,
3. Carry out the plan,
4. Look back.

As it can be read in Polya's book, there are many reasonable ways to solve problems, but the skill of choosing an appropriate strategy is best learned best of all by solving mathematical problems. He mentions problem solving strategies such as guess and check, make an orderly list, eliminate possibilities, use symmetry, consider special cases, use direct reasoning, solve an equation, look

for a pattern, draw a picture, solve a simpler problem, use model, work backwards, use formula, be ingenious. For challenging problems, see, for example, Problem 1 below, almost all of these strategies can be useful, but for typical school problems a small number of simple techniques may suffice.

Let us start with an instructive school exam task (VISC, 2022) that Form 9 pupils had to solve this year in Latvia, see Figure 1, where formulation was not mathematically correct and could have caused some confusion to pupils. This example illustrates that many teachers, even the so-called experts who design the tests, should practise, and develop not only their problem solving skills, but also even their mathematical problem formulation skills.

Figure 1. Problem 8 from the examination in mathematics for Form 9 in Latvia, 2022

The translation of this school task is as follows:

Zaiga is making shapes (see. Figure 1) from sticks that are 2.5 cm long.

8.1. How many sticks will be needed to make the fourth shape?

8.2. Write an expression and calculate how many sticks will be needed to make the 100th figure.

8.3. Calculate the number of the figure the perimeter of which is 105 cm.

8.4. Calculate the number of sticks in a figure the perimeter of which is 105 cm.

Remark. The formulation given by the authors of *Problem* 8 (see Figure 1) is not mathematically correct because, firstly, rule has not been given according to which the next shapes must be constructed and, secondly, it is bad that the ends of the sticks are not connected in the drawing. If the ends of the sticks have not been joined together, the question arises what is meant by the perimeter of the figure.

The fourth shape is probably assumed to be as in Figure 2. The next shapes could just as well be as in Figure 3.

Figure 2. Arrangement along the bar

Figure 3. Spiral arrangement

The situation with at least two different correct solutions is not always good for a pupil, because the teacher that corrects the solution of the pupil, might not consider other solutions that differ from the given one. For that teachers needs to be competent themselves to understand that other solution does not always mean that it is incorrect. On the Internet, you can find a solution that teachers are likely to show to their pupils as a good example of how to solve this problem, see Figure 4. This solution is neither the simplest nor the shortest.

Figure 4. Solution found on the YouTube (Jansons, 2022)

Here is a better solution.

Solution 8.2. Every next figure gains extra 2 sticks, this means that the number of the sticks in n-th figure can be calculated by formula

$$s(n) = 2n + 1 \Rightarrow s(100) = 201$$

Solution 8.3. The perimeter $p(n)$ formula is $p(n) = 2.5(2 + n)$. If

$$p(n) = 2.5(2 + n) = 105, \text{ then } 2.5n = 100, \text{ and } n = 40.$$

Solution 8.4. From the previous task we know that 40th shape has the perimeter equal to 105 cm, so $s(40) = 81$.

Some Problems about Magic Polygons

It is a familiar fact of mathematical instruction that a single good problem can awake a dormant mind more readily than highly polished lectures do.

Some instructive mathematics olympiad problems as well as topics for pupils' research papers to support, to encourage and to better equip teachers in their work with the gifted pupils are discussed. Several of these topics involve the study of geometric shapes – polyforms, which is not a part of the school mathematics curriculum. Polyforms are a rich source of problems, puzzles, and games, which are also quite suitable for workshops. Some such problems were presented at the 11th International Conference on Mathematical Creativity and Giftedness and have been published in proceedings of this conference (Bulina & Cibulis, 2019). In this paper some other problems from polyform topic, that are new and can be used in work with gifted pupils will be given and described.

Let us define some mathematical terms that will be used further in some of the given problems. A *polyomino* (*polyiamond*) is a plane shape that consists of unit squares (unit triangles) that are added to each other edge to edge. Here by *magic polygon,* we shall understand a squared or triangular polygon (a polyomino or polyiamond respectively) with all distinct whole sides: 1, 2, up to n (see Figure 5).

a)   b)   c)
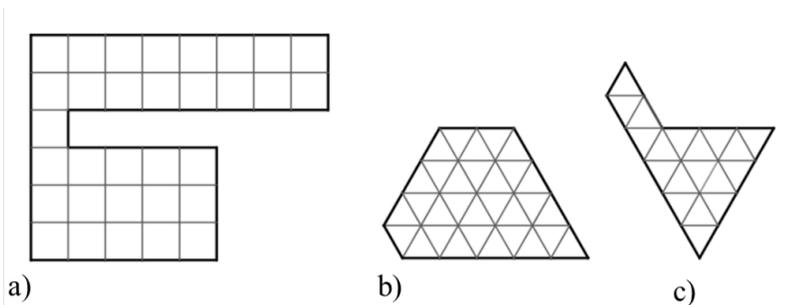
Figure 5. Magic polyomino and magic polyiamonds

If side lengths of a magic polygon are in the increasing order, it will be called *perfect* (see shape c) in Figure 5). In some literature (Dewdney, 1990; Sallows et al., 1991) perfect polygons on square grid are called *golygons*.

Let us look at some problems that deal with magic or perfect polygons.

Problem 1. Prove that there exists at least one magic polyiamond for each $n \geq 5$.

This problem can be easily solved with simple construction where magic polyiamond with $n = 2k + 1$ edges ($k > 2$) can be found by adding line segments to polyiamond with $n - 1$ sides from point X to Y with length n, 1 and $n + 1$ accordingly (see Figure 6). Similarly, you can construct magic polyiamonds with $n = 2k$, where $k \geq 3$.
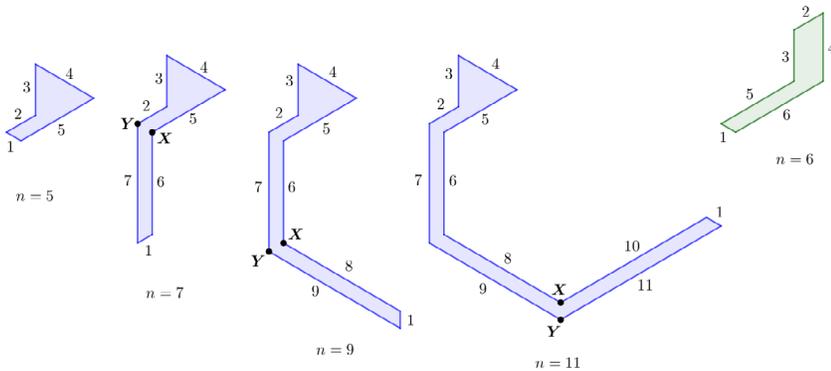
Figure 6. First four magic polyiamonds (found using given construction) and one magic hexagon

Finding such constructions is a good way to help gifted pupils to think outside the box and find some connection that might not be so easy to find at first. Problem 1 can be modified.

Problem 2. Prove that the construction in Figure 6 gives a magic polyiamond with the minimum area (polyiamond consists of the least number of triangles for fixed n).

Research topic 1. Find a construction that gives a magic polyomino with minimum area (polyomino consists of the least number of unit squares for fixed n).

Research topic 2. Find a construction that gives a magic polyomino with maximum area (polyomino consists of the greatest number of unit squares for fixed n).

In mathematics, as soon as new quantities are defined, there is a question about their existence. Here, the existence of perfect polyiamonds is a non-trivial question. This question can be divided in two separate problems (see Problem 3 and Problem 4).

Problem 3. Prove that for every even number $n \geq 6$ there exists a perfect polyiamond with n edges.

Solution to Problem 3. Since the number of edges is an even number $n = 2k$, here we use the idea of constructing only half of the broken line to start with, to obtain the polyiamond from two such halves. To implement the idea, we need to find broken lines with k edges which keep two fixed points (endpoints) after extending the edges. In mathematics, quantities that are preserved under a transformation are called *invariants*; the use of invariants is one of the big ideas of mathematics. After a little experimentation we can find some broken lines for which this invariance property holds, see Figure 7. Easy to check that if each segment length of the broken line (see A, B, C and D in Figure 7) is increased by 1 unit (dotted lines in Figure 7), the position of the broken lines endpoints (red and blue points in Figure 7) will remain the same.
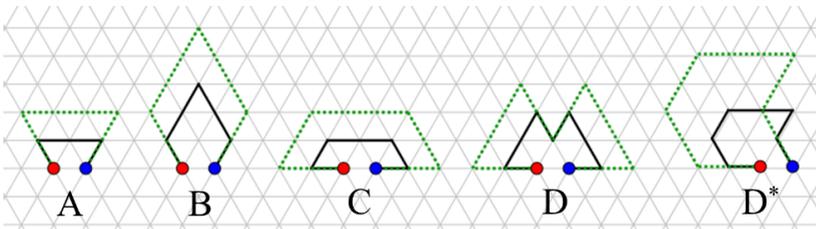
Figure 7. Broken lines with invariant position of its endpoints

The invariance property of the endpoints will also hold if the lengths of these broken line segments are different natural consecutive numbers (see A_1, B_1, C_1 and D_1 in Figure 8).
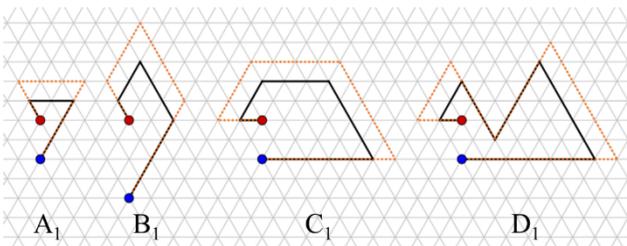
Figure 8 . Broken lines with consecutive edges

Let us use this result to prove that for each even n where $n > 4$ exists at least one perfect polyiamond. We separate 4 cases: $n = 6 + 8k$, $n = 8 + 8k$, $n = 10 + 8k$, $n = 12 + 8k$ (for all cases $k \geq 0$).

To find at least one perfect polyiamond for each $n = 6 + 8k$ where $k \in \mathbb{Z}_+$, we need to take two broken lines A from Figure 7 and add to each of them 4 edges (blue dotted lines in Figure 9) k times. For example, when $k = 1$ from broken lines A, B, C, D in Figure 7 we get broken lines with 7, 8, 9 and 10 segments (see Figure 9), while when $k = 2$ from broken lines A, B, C, D in Figure 7 we get broken lines with 11, 12, 13 and 14 segments (see Figure 10).
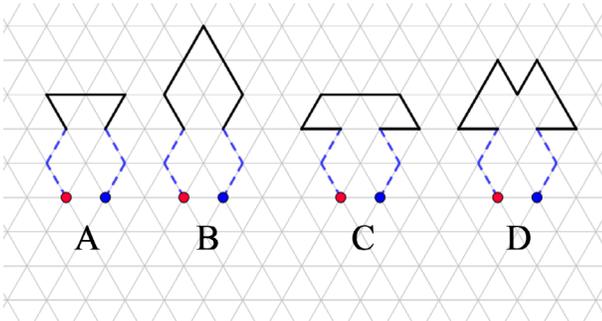

Figure 9. Broken lines with added dotted lines $k = 1$ times
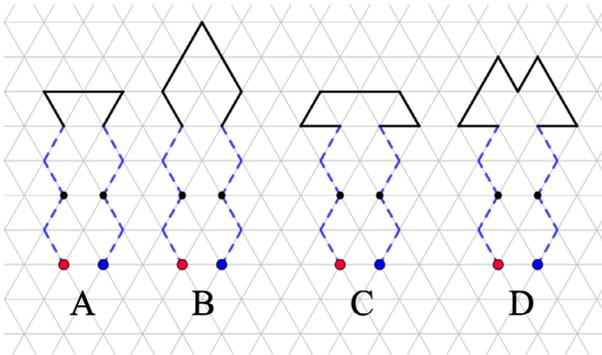
Figure 10. Broken lines with added dotted lines $k = 2$ times

To get magic polyiamond the two copies of a broken line of the same type, should be connected by endpoints of these broken lines. We then draw the resulting shape starting at one of the endpoints (connecting points) so that lengths of the edges starting at this point are consecutive numbers from 1 to n. For example, if $n = 14$, this construction gives a magic polyiamond shown in Figure 11.

Similarly, we can construct other perfect polyiamonds, except a perfect 10-gon. To show that there exists a perfect 12-gon, we need to take two copies of a broken line with 6 segments so the first and last segment both are not horizontal at the same time as it is for a broken line D in Figure 7.
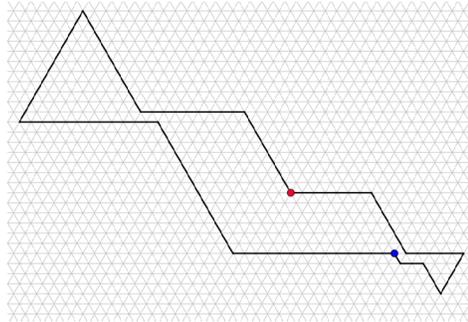
Figure 11. Perfect 14-gon

For example, using two copies of a broken line D* (see, Figure 7) we can construct a perfect 12-gon. From (Sallows, 1992) we also know that there exists four perfect 10-gons (polyiamonds). Moreover, none of these four perfect 10-gons can be obtained using construction given in Problem 3.

Problem 4. Prove that for every odd number $n \geq 5$ there exists a perfect polyiamond.

Problem 3 and Problem 4 are suitable topics that can be explored by gifted pupils with the aim of obtaining new constructions of perfect polyiamonds. Here we present one of the simplest constructions of perfect polyiamonds when the number of sides is $n = 8k + 3$.

We place the four edges, namely with the lengths $2k$, $4k + 1$, $6k + 2$ and $8k + 3$ horizontally, starting with the longest edge we assign orientation to all edges from 1 to n, as shown in Figure 12.
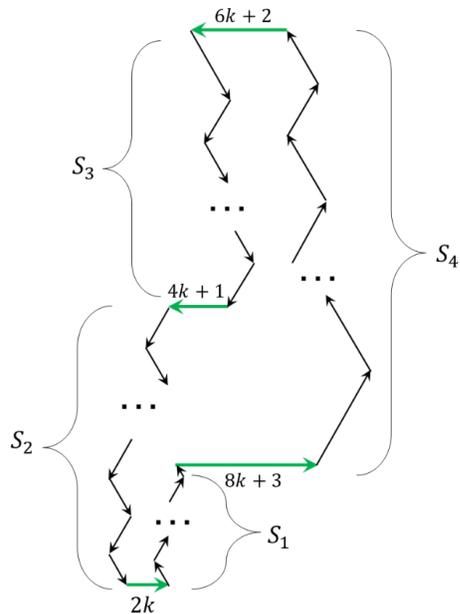
Figure 12. Perfect polyiamond with $n = 8k + 3$

Let us calculate the four sums S_1, S_2, S_3, and S_4 of edge lengths, see Figure 14. Applying the formula for the sum of the terms of an arithmetic progression, we obtain that

$$S_1 = 1 + 2 + \cdots + (2k - 1) = (2k - 1)k$$

$$S_2 = (2k + 1) + (2k + 2) + \cdots + 4k = (6k + 1)k$$

$$S_3 = (4k + 2) + (4k + 3) + \cdots + (6k + 1) = (10k + 3)k$$

$$S_4 = (6k + 3) + (6k + 4) + \cdots + (8k + 2) = (14k + 5)k.$$

From here, it is easy to see that

$$S_1 + S_4 = S_2 + S_3 \tag{1}$$

It means that the sum of edges with orientation ↗ and ↖ ("up") is equal to the sum of edges with orientation ↙ and ↘ ("down"). Similarly, the sum of edges with orientation → ("right") is equal to the sum of edges with orientation ← ("left")

$$2k + (8k + 3) = (4k + 1) + (6k + 2) \tag{2}$$

The mathematical interpretation of equalities (1) and (2) is that such construction does give a broken, closed line.

Remark. This construction was found in 2022 by Marta Rudzāte, a pupil of Form 12, now a student at the Faculty of Physics, Mathematics and Optometry, the University of Latvia. She has also been able to find perfect polyiamonds with $n = 8k + j$, $j = 1, 3, 5, 7$. Here we see that there are gifted pupils who can perform at Master's level.

Research topic 3. Show that there exists at least one perfect polyiamond for cases $n = 8k + 1$, $n = 8k + 5$ and $n = 8k + 7$. Is it possible to find a construction of perfect polyiamonds that gives $(2k + 1)$-polygons at once, i.e., without having to search separately four types of polygons?

Let us propose one more research topic to use in work with gifted pupils in their research works or contest papers. Some results could be modified to be used as problems in mathematics olympiads.

Research topic 4. What is the maximum (minimum) area of a polyomino having edges. What is the answer to the modified problem if additionally, we require polyomino to be perfect? Research these questions when considering polyiamonds instead of polyominoes.

Conclusions

Teacher shortages are a serious problem not only in Latvia, but also worldwide. This situation leads to a shortage of qualified teachers who can work not only on school subjects, but also at a higher level, supervising the research projects of gifted pupils.

The shortage of teachers has many negative effects, such as no competition, no contingent to work with at a higher level, and in this context, there are repeated assessments by education experts that the Latvian education system is catastrophically lacking excellence, and the overall level is very mediocre compared to other developed countries. A shortage of teachers creates a shortage of excellence, but excellence requires difficult tasks.

The compilers of the school task (see Figure 1) had to draw a triangle lattice instead of a square lattice, because the task requires drawing and counting triangles.

This article offers some research topics as well as mathematical ideas that may be useful for teachers working with their gifted pupils.

All the given research topics deals with polygons on a square or triangle grid. Exploring polygons of this type can easily be integrated into the new school curricula that emphasise the so-called big ideas in mathematics, such as analogy, abstraction, averaging, induction, symmetry, transformations, invariants, etc. Authors are always eager to learn about clever alternate solutions for challenging problems, and therefore would be pleased to hear from you should you have any.

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Changes in the Mathematics Curriculum for Grades 10–12 in Latvia

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ABSTRACT

In the school year 2021/2022 in all schools and for all grades in Latvia ends the gradual transition from the previous mathematics standard (that was used since year 2008) to the new mathematics standard. This standard is developed within the ESF project "Competence Approach to Curriculum (School 2030)". The mathematics subject in the secondary school is divided into two parts: Mathematics I (optimal level for every secondary school student) and Mathematics II (advanced level for secondary school students who plan to study exact sciences at the university). The final exam also is different and will focus not only on solving problems but also on the correct use of mathematical language and justification. These changes also have effect on the learning process, now emphasis is on the competency-based learning that will provide pupils with the knowledge, skills and attitudes needed for modern life.

The aim of our study is to compare standards, curricula, and final exams to analyse the differences in mathematics content for grades 10–12. The method used in this article is document analysis as documentary research as well as analysis of pupils' results in final mathematics exams.

As the education system in Latvia is in the process of transition, it is important to understand how the changes might affect pupils' knowledge and skills in mathematics.

Keywords: competency-based education, education system in Latvia, mathematics curriculum, mathematics for Grade 10–12, mathematics final exam, project School2030, secondary education standard

Introduction

Mathematics education has been changing and developing in Latvia as everything else over the last twenty years of independence. The changes affected educational programmes, teaching methods etc. Basic educational attitudes in

Latvia changed from traditional (heritage of soviet education) to progressive education.

Currently, education systems in every country are different, but there are international studies that evaluate the academic performance of pupils, so that each country can compare the performance of its pupils with others and decide on the necessary changes.

For example, PISA is an international survey which is aimed at the evaluation of education systems worldwide by testing skills and knowledge of 15-year-old pupils. It is conducted every three years. One of areas in which students are assessed in this study, is mathematics. The mean score in mathematics from PISA 2018 for Latvia in mathematics was 496, i.e., pupils in Latvia scored higher result than the OECD average (489) in mathematics (PISA 2018 Results. Combined Executive Summaries. Volume I, II & III, 2019). For comparison, the two other Baltic countries with a similar history have the following mean scores in mathematics: Lithuania 481; Estonia 523. Mean mathematics performance was significantly higher in PISA 2018 than in PISA 2015, but when considering the entire 2003-2018 period, mathematics performance appeared to oscillate around a stable mean, with no clear direction of change; a more consistently positive trend is observed amongst the lowest-achieving students in mathematics, narrowing the gap between those and higher-achieving students to some extent (Country Note. PISA 2018 Results. Latvia, 2019).

TIMSS is an international assessment of mathematics and science, it is conducted every four years for Grade 4 and Grade 8. Average mathematics scale score for Latvia (Grade 4) in 2019 was 546, TIMSS scale centerpoint was 500, for comparison, Lithuania 542, Estonia did not take part in this study (Mullis et al., 2020). There are no results for Grade 8 pupils.

Unfortunately, both studies concern pupils in primary education. There are no international studies for pupils in secondary education. We can internationally compare the performance of secondary school pupils in mathematics through mathematical olympiads. For example, relative ranking for Latvia in last three years in the International Mathematical Olympiad is respectively 36.54%, 55.66%, 39.81%; for Lithuania 49.04%, 29.25%, 54.37%; for Estonia 46.15%, 53.77%, 52.43% (International Mathematical Olympiad. Latvia. Team Results, 2022). Unfortunately, these results do not reflect knowledge and skills that can be acquired in mathematics lessons.

The other way how to compare different education systems in countries to gain knowledge about possibilities for improvement is to compare curricula. Note that this is not the only way, for example, different levels of comparison in educational studies are described in (Bray & Thomas, 1995).

There are several research studies describing or comparing education systems in different countries. For example, Moravcova et al. (2019), Kácovský et al. (2022),

Prendergast & Treacy (2017), Demirtaş et al. (2015), Norvaiša (2019). Curricula from other countries are often not available in English, making it difficult to compare them. However, we do not know any publication that compares a mathematics curriculum of Latvia with other countries or describe changes in mathematics curriculum in Latvia.

The aim of our study is to describe and compare standards, curricula, and final exams to analyse the differences in mathematics content for grades 10–12, as well as to investigate the immediate effect (if any) that this change has on pupils' final exam results. This will be done through analysing the results of two types (the old one and the new one) of final exam in 2022.

In Latvia the following levels of education are specified:
1) pre-school education,
2) basic education (Grades 1–9, age from 7 to 16),
3) secondary education (Grades 10–12, age from 16 to 19),
4) higher education (Education Law, 1998).
More about system of education in Latvia see (System of education, 2022).

Curriculum is a broad term. In our research, we analyse only official national documents of intended curriculum for secondary education in which we can find learning content, time allotment, educational goals, and objectives.

In Latvia, the official document that sets out requirements for secondary education is Republic of Latvia Cabinet of Ministers Regulation No. 416 (Regulations Regarding the State General Secondary Education Standard and Model General Secondary Education Programmes, 2019). Since 2020, the new standard gradually is implemented in different grade groups. This standard is developed as part of the National Centre of Education ESF project Nr.8.3.1.1./16/I/002 "Competence Approach to Curriculum (School 2030)" (About Project, 2022). These changes affect educational institutions from pre-school to secondary school, most significant changes in mathematics are in Grades 10–12, that will be discussed in this article.

In order to make it easier for teachers to fulfil the requirements of the law, in Latvia a sample of curriculum for mathematics is centrally developed and it is recommended to use it when organizing the mathematics learning process. The sample curriculum is only a recommendation, so teachers can develop their own curriculum accordingly to the subject standard. In this article we analyse a curriculum for the optimal level and a curriculum for the highest level: (Mathematics I. Sample curriculum of the optimal course for general secondary education, 2020) and (Mathematics II. Sample advanced course curriculum for general secondary education, 2020). Curriculum for the general level course Mathematics will not be analysed in the article.

Methodology

The research subject of this work is the changes in the mathematics curriculum for Grades 10-12 in Latvia. The study aims to overview the current situation of education system and teaching mathematics. The method used in this article is document analysis as documentary research where we analyse general and specific changes in mathematics curricula compared to the previous mathematics standard and curricula that were introduced in 2008. The focus was on the optimal and higher level courses. Also, we analyse pupils' results in the mathematics final exam.

Results

This section is divided into four parts. We start with a brief history of education system in Latvia. In the second and third part we describe the general and specific changes of the subject Mathematics in the secondary education system in Latvia. As final part we analyse pupils' results in mathematics final exam.

A Brief History of the Mathematics Education System in Latvia

In 1991, Latvia regained its independence, therefore there was a need for new educational system. As a result, in 1991, the Law of Education was adopted.

In 1995, with the conformation of the concept of Latvian Education the reform of the educational content was started. In 1998, the first national basic education standard was approved, as well as a new Law on Education was adopted. A year later, in 1999, the law on general education and the law on vocational education were introduced. The reform lasted until 2002 when all grades were taught by the new standard. During this period a national examination system was established, which provided national examinations in the grade 3, 6, 9 and 12 and final centralized examinations at the end of general secondary education programs (Andersone, 2022).

In 2008 a new curriculum with reduced content of mathematics for secondary school (grade 10–12) was developed. Based on this curriculum new national education standards were approved for primary education (2014) and for general secondary education (2013). Subject curricula and educational standards based on the competency approach are being developed and improved from 2012 to 2017. New educational standards and curricula are immediately introduced a system of national tests and centralized examinations that encourage to faster introduce the innovations (Andersone, 2022).

During this period the main changes in the content of mathematics were the removal of complex numbers, polynomial division, elements of mathematical analysis and elements of analytic geometry from the curriculum. Until 2002 these topics were included in advanced mathematics courses.

In 2020 significant changes are again introduced in mathematics content. As a result, a pupil can choose to obtain mathematics in advanced level that includes for example elements of mathematical analyses and elements of analytic geometry.

Secondary school education now is divided in three levels – general, optimal and highest. (See Figure 1 as example for mathematics). For each level the intended results to be achieved by a pupil have been formulated, see (Regulations Regarding the State General Secondary Education Standard and Model General Secondary Education Programmes, 2019).
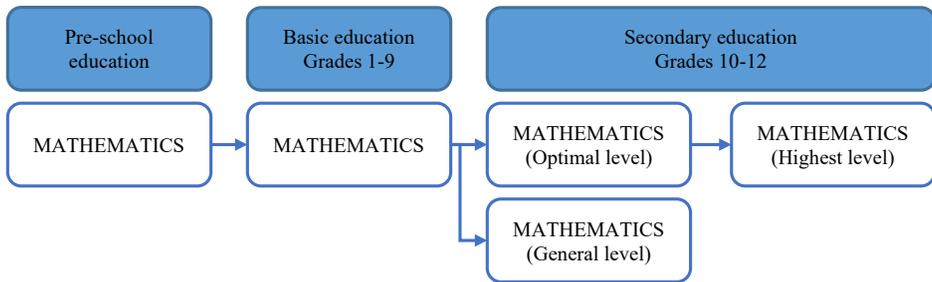

Figure 1. Three levels of secondary school education

On the general level a pupil must solve problems in familiar situations, supplement, generalise, and systematise the knowledge, understanding, and skills acquired in the basic education. On the general level of acquisition, it is mandatory to acquire a part of the content of each field of study according to the standard of general secondary education. This level is more intended for pupil who have chosen secondary education with professional orientation in some direction (for example, arts, music, cook, tailor).

On the optimal level a pupil strengthens skills to plan and implement independent action of cognition and problem-solving, identifies and solves problems in simple, unfamiliar situations, establishes deepened conceptual understanding in the field of study with interdisciplinary elements, demonstrates complex skills, acquires product creation experience. Acquisition of the study content on the optimal level is a pre-condition to study on the highest level and is important for comprehensive general secondary education.

On the highest level the pupil intentionally, responsibly, creatively, and independently plans and supervises his cognitive activity, independently solves problems in unfamiliar, complex situations, establishes a deep conceptual understanding in the field of study, and recognises interdisciplinary regularities. On

this level the study content is advanced, expanded, and significant for the further studies at the universities.

All study subjects in the secondary school are divided into courses. There are two or three courses for each subject, these courses are named Subject, Subject I and Subject II (Sample curricula in secondary education, 2020). For the general level are courses Subject and some Subject I courses (for example, pupil must learn course Mathematics and course Latvian I, as well as pass the appropriate exams). The general level is separated from secondary education and will not be analysed in this article.

For the optimal level are intended courses Subject I, but for the highest level courses Subject II (for example, pupil learns Mathematics I on the optimal level and Mathematics II on the highest level). A pupil must choose to acquire at least three courses in the highest level and pass at least two appropriate highest level exams. To graduate a secondary school pupil must pass at least four exams, including exam in Latvian (native language), foreign language and mathematics. All exams must be at least in the optimal level and at least two exams must be in the highest level.

General Changes in Mathematics for Grades 10–12 in Latvia

Since there are crucial general changes in the secondary education system, it also influences the subject curricula and teaching process organization. Previously in secondary school pupils learned mathematics all three years (grade 10–12) and there was the same final exam, regardless of the number of math classes that could have differed from 4 to 8 hours per week. Accordingly, to the new standard a school can choose what level courses it will provide to pupils and how the learning process will be organized. There are four main options how mathematics can be taught (see Figure 2). In the most cases schools choose to teach course Mathematics I in Grade 10 and Grade 11 (each year 6 hours per week), after completing this course, pupils take an optimal level exam.
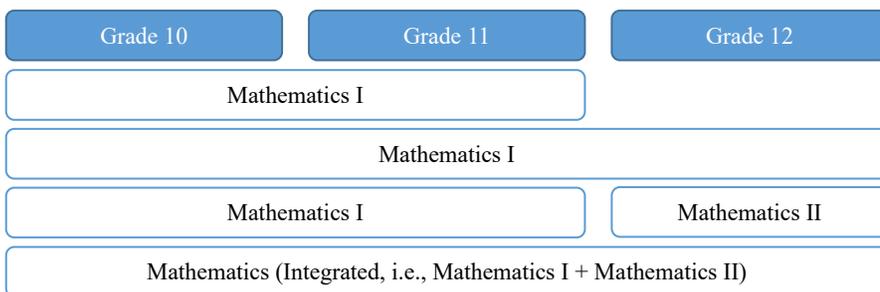

Figure 2. Course Mathematics I and Mathematics II learning organization in schools

The knowledge acquired in the course Mathematics I (the optimal level) is sufficient for further studies in areas where mathematics is not a profiling course. Thus, if school provides and pupil chooses the course Mathematics II (the highest level in which a pupil acquires knowledge that is essential for further studies where mathematics is necessary, for example, physics, computer science) is taught in Grade 12 (8 hours per week). At the end of grade 12 a pupil can take a highest-level exam if he needs it. Other option is to teach course Mathematics I in grades 10–12 choosing an appropriate number of lessons per week and taking an optimal level exam at the end of Grade 12. There are some schools (mostly gymnasiums) that teach both mathematics courses in an integrated manner without diving the content of mathematics into two parts.

Since the project School2030 developed the standard from pre-school till secondary school education then the standard of mathematics for secondary education continues the structure of basic education and also has six main parts (Regulations Regarding the State General Secondary Education Standard and Model General Secondary Education Programmes, 2019):

- the language of mathematics,
- strategies and reasoning characteristic to mathematics,
- numbers, operations on numbers,
- elements of algebra and functions,
- data and elements of statistics,
- shapes.

The approach to learning process itself also has changed (see Figure 3). If before the 2000s a teacher was more like a lecturer who gave ready knowledge and facts to pupils and pupils mostly solved tasks by the given algorithm, then now a teacher must become a consultant that helps pupils to construct new knowledge themselves and apply it in new situations.
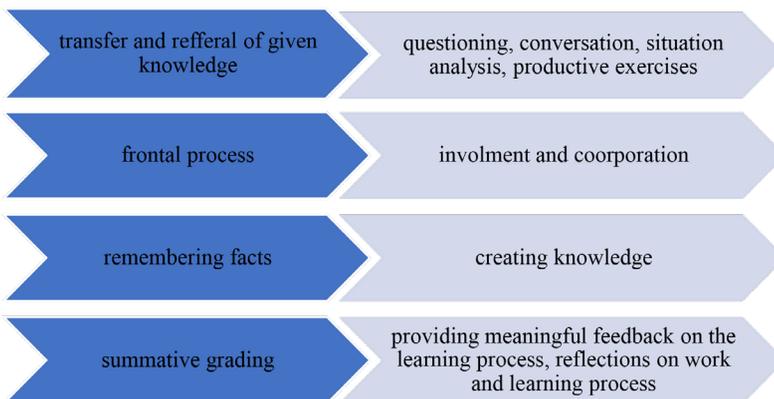

Figure 3. Main Changes in the Teaching and Learning Process

Thus, the learning process has changed from transfer and referral of knowledge to creating new knowledge by questioning and exploring. The frontal teaching process changes to process where pupils take active involvement and corporation. The accents are on using and creating knowledge as opposed the previous situation where emphasis was more on remembering specific facts as a goal of a study subject. Understanding a mathematical concept is put primary to practising, which is necessary but secondary. The exam results in next few years will show how these changes have affected students' mathematical knowledge since remembering mathematical facts and formulas are necessary to be able to solve complex problems and create new knowledge.

Evaluation system also has changed, now a teacher must set learning outcomes and give meaningful feedback on the process of learning and further development, as well as pupils should be encouraged to reflect on their learning and thinking.

Continuity, systematicity and integrity are the guiding principles behind the new standard and curriculum. Consequently, the course Mathematics II is built as a logical continuation for the course Mathematics I (see Table 1). In order to create a transparent and content-successive relationship between these courses, their content is organized in modules, for example, the module "Analytic geometry II" includes content that successively continues the content of the module "Analytic geometry I", supplementing it and deepening.

Table 1. Mathematics I and Mathematics II modules

Mathematics I modules	Mathematics II modules
Analytic geometry I	Mathematical induction
Probability and statistics I	Probability and statistics II
Algebra I	Algebra II
Trigonometry I	Elements of mathematical analysis
Geometry I	Trigonometry II
	Analytic geometry II
	Geometry II

In the course Mathematics II after more than 20 years again are included elements of mathematical analysis. This crucial change is justified by a global situation since many schools in other countries teach mathematical analysis, likewise, many universities require that future students have already acquired elements of higher mathematics such as limit, derivative, integral etc.

Specific Changes in the Mathematics Standard and Curriculum for Grades 10–12

In this subsection mathematics curriculum examples for Grades 10–12 are compared, focusing on content changes in each grade:

1) previous curriculum – (Mathematics for Grades 10–12. Sample curriculum, 2008);

2) current curriculum – (Mathematics I. Sample curriculum of the optimal course for general secondary education, 2020) and (Mathematics II. Sample advanced course curriculum for general secondary education, 2020).

Previous curriculum was designed for educational programmes with 4 mathematics lessons per week. Teachers could use it as a model for their own authoring curriculum, for example, if the number of mathematics lessons per week was higher. In the current curriculum 6 lessons per week are planned for Mathematics I (Grades 10–11) and 8 lessons per week are planned for Mathematics II (Grade 12).

The General Education Law in Latvia states that the duration of a lesson in general secondary education programmes shall be 40 minutes and the duration of the academic year in general secondary education institutions shall be:

1) 35 weeks in grades 10 and 11;

2) 38 weeks in grade 12 (General Education Law, 1999).

In Tables 2, Table 3 and Table 4 are given order of topics in the previous and current mathematics curriculum, as well as number of lessons (indicated in brackets) intended for each topic. In the new curriculum is changed the emphasis on teaching approach and teaching sequence of certain mathematics topics and concepts. The main changes are commented below the tables.

Table 2. Topic Order in the Curriculum for Grade 10

		Curriculum 2008 (4 lessons per week)	Curriculum 2020 (Mathematics I) (6 lessons per week)
		Introduction (4)	
10.1.	Vectors (10)	*Analytic geometry I*	Vectors and motion (26)
10.2.	Linear, power and quadratic functions (16)		Equation of a line (34)
10.3.	Mathematical statements, proofs (18)	*Probability and statistics I*	Combinatorics and probability (38)
10.4.	Concept of angle, triangles (16)		Statistics (30)
10.5.	Trigonometric, logarithmic, and exponent functions (20)	*Algebra I*	Rational function, algebraic fractions (46)
10.6.	Sequences (10)		Rational equations and inequalities (34)
10.7.	Algebraic expressions and equations (18)		
10.8.	Circles and polygons (16)		

In the topic "Vectors and motion" the number of lessons in the current curriculum has more than doubled. This topic is planned as an interdisciplinary topic in mathematics and physics.

In the topic "Equation of a line" equations $Ax + By + C = 0$ and $\frac{x-x_1}{x_2-x_1} = \frac{y-y_1}{y_2-y_1}$ and $(x - a)^2 + (y - b)^2 = R^2$ are included. In the previous

curriculum only equation of a straight line in form $y = ax + b$ was included besides in topics other than analytic geometry. Physics content is also integrated in this topic.

Previously topics "Combinatorics and probability" and "Statistics" were in Grade 11. The number of lessons in the current curriculum has more than doubled. The new curriculum has more in-depth content related to elements of probability theory, e.g., students will use operations with sets to calculate the probability of events, develop an understanding of conditional probability and independence of events. The new curriculum both deepens and extends the statistical content (e.g., quartiles and box plot are included). Currently in Latvia there are no textbooks that are intended for the new standard and curriculum. In the textbooks that were used for the previous curriculum can be found materials for most of the topics, unfortunately there is a problem with the topic "Statistics", because there are no appropriate materials in Latvian that could be used in the learning process. This could have a negative effect on pupils' knowledge and the exam results.

Previously topics "Rational function, algebraic fractions" and "Rational equations and inequalities" were divided through Grade 8, 10 and 11. In the current mathematics curriculum is a topic "Rational function, algebraic fractions" that includes transformations of algebraic fractions that were previously included in the elementary school mathematics curriculum. Current content includes defining the properties of the function $y = \frac{ax+b}{cx+d}$, graphing and applying it to contexts of other learning areas such as economics.

In the previous curriculum was topic "Trigonometric, logarithmic, and exponent functions". Logarithmic functions are not included in the current curriculum for Mathematics I. The new curriculum (Mathematics I) includes only two of trigonometric functions – the sine and cosine functions which are covered in the Grade 11 topic "Sine and cosine functions".

The existing curriculum has reduced the amount of content in geometry, integrating it into the topic of trigonometry and replacing it with the topic of some analytical geometry questions. Classical geometry topics (such as angles in circles, triangles, inscribed and circumscribed quadrilateral etc.) that previously were taught in Grade 8 and Grade 10, now are included only at the end of the course Mathematics II. It is unclear the further use of this knowledge since at the universities there is no need for these concepts. However, classical geometry is a basis for mathematical olympiads starting from national level competitions till the International Mathematical Olympiad. Thus, these changes might have a negative effect on pupils' knowledge in classical geometry and cause a decrease on mathematical olympiad results, because in the olympiad problem set there always is at least one problem in classical geometry.

Table 3. Topic Order in the Curriculum for Grade 11

	Curriculum 2008 *(4 lessons per week)*	Curriculum 2020 (Mathematics I) (6 lessons per week)	
11.1.	Algebraic inequalities (18)	*Trigonometry I*	Sine and cosine functions (29)
11.2.	Geometric transformations (12)		Trigonometric expressions and equations (24)
11.3.	Elements of statistics (12)	*Algebra I*	Power with a rational exponent, geometric progression (28)
11.4.	Elements of combinatorics (12)		Exponent function (32)
11.5.	Elements of probability (12)	*Geometry I*	Straight lines and planes in space, polyhedrons (38)
11.6.	Parallel and perpendicular lines and planes (22)		Solids of revolution and combinations of solids (38)
11.7.	Trigonometric equations and inequalities (26)		
11.8.	Prism (16)		

As said above in Mathematics I (Trigonometry I) is not included functions $y = \tan x$ and $y = \cot x$. By looking only at the sine and cosine functions, in optimal level pupils might get the false impression that all trigonometric functions are bounded and continuous. Tangent and cotangent functions are included only in Mathematics II. Trigonometric inequalities also are removed from the optimal level course curriculum, simple trigonometric inequalities are included only in Mathematics II.

Topic about power with a rational exponent and geometric progression previously was in Grade 10 in different topics, but now these concepts are joined in one topic.

The new curriculum has 76 lessons for Geometry I and all polyhedrons are joined. Previously, roughly the same topics were covered in Grade 11 and 12, with 70 lessons within 5 topics.

In the previous curriculum geometric transformations was as separate topic, but now these transformations are included as part of different topics: parallel translation and axial symmetry is taught together with function transformations and in the topic "Sine and cosine functions"; rotation is in the topic "Sine and cosine functions", but homothety is not mentioned in the current curricula in Mathematics I, although homothety is mentioned in the standard for optimal level. Geometric transformations are included as subtopic Mathematics II topic "Planimetry II".

After many years, elements of mathematical analysis are again included in the curriculum.

Table 4. Topic Order in the Curriculum for Grade 12

	Curriculum 2008 *(4 lessons per week)*	Curriculum 2020 (Mathematics II) *(8 lessons per week)*	
12.1.	Exponential equations and inequalities (16)	*Mathematical induction (16)*	
12.2.	Logarithmic equations and inequalities (16)	*Probability and statistics II (23)*	
12.3.	Pyramids (16)	*Algebra II*	Sequences and power function (20)
12.4.	Solids of revolution (18)		Exponent function and logarithmic function (24)
12.5.	Functions (16)		Rational function and algebraic transformations (26)
12.6.	Equations and inequalities, their systems (24)	*Mathematical analysis*	Derivation and its applications (47)
12.7.	Combinations of solids (14)		Integrals and its applications (27)
12.8.	Mathematics as a value and mathematics as a tool (6)	*Trigonometry II (28)*	
12.9.		*Analytic geometry II (22)*	
12.10.		*Geometry II*	Planimetry (18)
12.11.			Stereometry (20)

These topics require that pupils can explain or define the limit of a sequence, the limit and continuity of a function, the derivative of a function, the primitive function, the indefinite and the definite integral; use derivatives and integrals of functions in mathematics and in the context of other fields of study. Emphasis is put more on practical applications of these concepts and on use of an information technology than on solving techniques and theoretical basis. The project School2030 as main arguments for the inclusion of the mathematical analysis in the secondary school curriculum states the following:

- elements of mathematical analysis are necessary for other subjects (for example, physics),
- acquisition and applications include and bind knowledge obtained before,
- it is necessary to prepare pupils for successful studies by creating an understanding of basic concepts of mathematical analysis, understanding is primary, but technique is secondary (Vilciņš, 2020).

Until now, elements of mathematical analysis were usually taught at universities during the first year of studies. Although these topics are usually taught more theoretically at universities, one should think about whether some accents must be changed in order not to duplicate what was taught at school. In addition, university teaching staff are concerned whether teachers will be knowledgeable and competent enough to teach mathematical analysis at school. Another

dangerous turn of events is that teachers without appropriate knowledge can give to pupils the wrong idea about certain mathematical concepts and their use. This concern has a reason since part of the teachers are not confident in their ability to teach mathematical analysis and emphasize that courses for teachers are necessary (Vilciņš, 2020).

Mathematics Final Exams and Changes in Exam Structure

Referring to the fact that the labour market lacks people with knowledge of STEM subjects, in school year 2008/2009, the mathematics exam was made mandatory for all secondary education pupils. Until then, pupils could choose to take or not to take a final mathematics exam, it was up to school to decide whether their pupils must take the exam or not. However, during the years 2001–2007 for all secondary education pupils it was mandatory to take a final test in mathematics (this test was easier than the exam). The year 2022 was the last year when all secondary education pupils took the same mandatory final mathematics exam.

When in the school year 2021/2022 a discussion about a mandatory final exam in one of the STEM subjects started with the main argument that it is necessary to improve pupils' knowledge in natural sciences, the Minister of Education and Science of Latvia Anita Muižniece (2021–2022) urges not to do so, if only based on the conclusions about what the mandatory mathematics exam gave (or did not give):

> *During this 12-year period, in only three years did the average score exceed the 40 percent threshold. This is not evidence of a trend, but rather a response to lower requirements, so it is clear that the mandatory exam does not automatically produce more competitive secondary school graduates. The motivation to study is not created by the requirement of exams, but by the content and quality of the process, that is why we must give a chance to the new content – only by waiting and evaluating the results of the acquisition of in-depth knowledge and skills, we can talk about the need for additional changes.* (Muižniece, 2022)

In the Table 5 are given average results in the mandatory final centralized exam in mathematics for last 14 years (Results of centralized examinations, 2022), (National examinations 2021/2022 Statistics, 2022). The year 2022 mathematics final exam can be found in (Centralized exam, Mathematics, 2022). The results in 2022 are a bit higher than in previous years, but it could be explained by the fact that before the exam it was stated what kind of tasks will be in the exam (for example, first task in the second part of the exam will be an exponential equation or inequality of the form $a^{f(x)} = a^{g(x)}$ or $a^{f(x)} > a^{g(x)}$. Thus, it was planned to reduce the negative impact of the COVID pandemic on pupils' knowledge, because Grade 12 pupils of year 2022 learned remotely for more than 1.5 years in total.

Table 5. Average Results in the Mandatory Final Centralized Exam in Mathematics by Year

Year	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Average, %	37.6	36.1	35.4	32.7	34.6	34.9	36.2	43.6	43.3	37.3	42.9	35.6	37.3	37.1

In 2022, Grade 11 pupils' that learn in schools and vocational education institutions and who have taken the course of the optimal level according to the new standard requirements, took the new exam for the first time. Only 4338 pupils took the mathematics exam in the optimal level and the average result in this exam was 40.03% (National examinations 2021/2022 Statistics, 2022).

According to the average score in the exams (37.6% in the mandatory final centralized exam and 40.03% in the optimal level exam), the National Centre for Education Republic Latvia concludes that the Grade 11 pupils' results are equivalent to those achieved by the Grade 12 pupils (This year, students managed to slightly improve their performance in all centralized exams, 2022).

It should be noted that only part of the pupils who learned the course Mathematics I took this exam, the rest will take it in the next school year. Thus, the average result 40.03% does not describe the situation in general, because many pupils decided to postpone their exam since it was something new and unknown, and only one sample of the exam was given. The 2022 mathematics exam sample for the optimal level can be found in (Centralized exam, Mathematics, Optimal Level, 2022).

In the Figure 4 are given overall rankings by school type in 2022 in the final exam (overall 14489 pupils) and in the optimal level exam (overall 4338 pupils). We can observe that the results for gymnasiums and secondary schools are significantly lower than in the centralized exam. One of the reasons could be that in the exam more attention was paid to correct mathematical language and explanation of the solution steps – this is a new experience and pupils do not know how much in detail they must explain their solution and judgments.
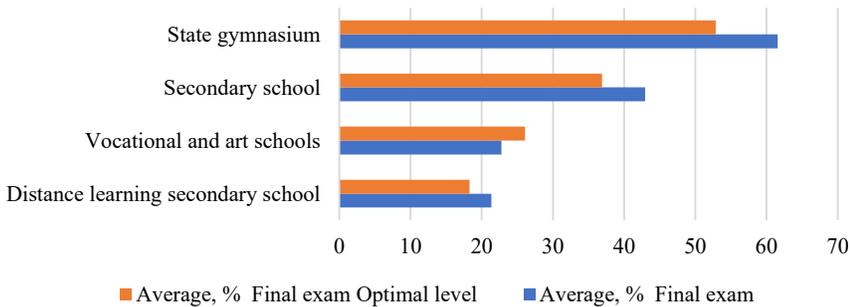

Figure 4. Overall Rankings by School Type in the Year 2022 in the Final Exams in Mathematics

Pupils who are good at mathematics frequently use facts, formulas, and algorithms that they assume are well known or obvious and do not consider it is necessary to explain anything further, but thus they can lose points. There are no precise instructions about the facts that can be used without justification, so pupils do not know what kind of solutions and explanations are expected. On the other hand, for the vocational and art schools whose pupils' results were significantly lower have improved this year. One of the reasons could be that many pupils of these schools have decided to take the final mathematics exam in the general level and only few took the optimal level exam. The other reasons could be that some very simple tasks were included or maybe it is possible that the changes in the standard and curriculum improve the basic knowledge and understanding of mathematical concepts.

Although the average results in the mathematics exam at the optimal level are higher than in this year's mandatory final centralized exam, it is difficult to predict whether this trend will continue in the following years. In addition, it should be noted that these exams are different both the structure and evaluation criteria.

Discussion and Conclusions

We have analysed how the education system in Latvia has changed over the last 30 years of independence, as well as changes in the mathematics standards and curricula since 2008.

In the school year 2022/2023 all grades (Grade 1 to 12) in all schools in Latvia are learning according to the new standard and curriculum. Compared to the previous mathematics curricula, some topics have been reordered and some topics have been moved from the primary school and some topics cover themes from the higher education. The changes in the subject content and in the teaching approach are significant, but at the moment it is not known how these changes will affect pupils' knowledge. The results of the first final mathematics exam in the optimal level show some improvement on the average score, but the increase is not significant and not all pupils took this exam.

By the new standard not all secondary school pupils learn the same content, there is an opportunity to specialize in specific fields that are necessary for the pupil in the future, also the final exam is different according to the chosen courses and subjects he acquire. Now, there are only one year's results, which were not taken by everyone who have learned the course Mathematics I, so for now there are no trends to be observed, what impact the new content and approach has on the pupils' knowledge and skills.

There is a greater emphasis on the correct use of mathematical language and these skills are evaluated in exams, this can have a negative impact on the

exam results for the talented pupils who consider many mathematical facts to be common and obvious and do not see the necessity to further justify them in more detail. Since talented pupils participate in mathematical olympiads it is not known what impact the new order of topics will have on pupils olympiad results in both national and international level.

There is no research on how the inclusion of higher mathematics elements in the secondary education will affect universities – the data are not available since first graduates that learn by the new standard will enter universities only in autumn 2023. It is possible that there will be a need for significant changes in the higher education as well.

Since the education system in Latvia is still in the process of transition there are open questions to be discussed and analysed further:

- Are all the changes justified and supported by teachers?
- Are teachers competent to teach by the new approach and the new content?
- How does the lack of textbooks affect the implementation of the content?
- How will these changes affect the study process at universities?
- How will these changes affect mathematical olympiads?

To draw qualitative conclusions about the impact of the new curriculum on the pupils learning and knowledge, it is necessary that factors affecting the learning process, such as the COVID-19 pandemic, pupils that have only partially learned following the new curriculum, preparedness of teachers, lack of textbooks, no longer have a significant impact.

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Secondary-School Student Transversal Skills in Mathematics. Comparison Between Teacher Assessment and Student Self-Assessment

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ABSTRACT

In order to ensure attainment of educational objectives, the development of transversal skills has been identified as a key component of learning. The future is uncertain, and it is difficult to predict, which knowledge and skills will be needed for life. Education must not only prepare young people for work but also encourage the development of skills that are essential for students to become active and responsible citizens. The uncertainty about the future also changes accents in education by increasing the importance of transversal skills in secondary education, including in the subject of mathematics. In view of the fact that learning in school is mostly carried out in specific subjects and the context of the subject influences the expression of transversal skills, it is necessary to assess the student degree of transversal skill development in a specific subject. Therefore, the study assessed transversal skills of secondary school students in mathematics. Student transversal skills were measured from two perspectives: teacher assessment and student self-assessment. The mean values of pupils' self-assessment were significantly higher than that of teachers. However, the analysis of the results shows the similarities between teacher assessment and student self-assessment as transversal skills that are evaluated higher are the same. Both teachers and students have highly evaluated their analysis and collaboration skills. Also, transversal skills that are evaluated as least developed by teacher and students are the same. Both teachers and students have evaluated their problem-solving skills and creativity as the less developed among all measured transversal skills. Although average values of teacher assessments and student self-assessments vary, there is consistency in both assessments, indicating that both students and teachers are well aware of students' transversal skill development level. However, students' self-assessments mean value tends to be higher than mean value of student assessment by teacher.

Keywords: secondary school, self-assessment, mathematics, transferable skills, transversal skills

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Introduction

Globalization and the rapid development of technologies has led to changes in our daily lives. The new generation needs to be integrated into an environment characterized by density and diversity (Rongraung et al., 2014). We have significantly changed way of life, work, and activities, especially in education (Khan et al., 2018). As a result, today's education system faces a difficult challenge: improving students' transversal skills to enable them to continue their education at the next level, enabling them to enter the labour market successfully (Mohd Rasli, 2020) and, if necessary, to learn remotely (Lāma & Lāma, 2020, Lāma, 2021, Baranova et al., 2021, Slišāne et al., 2021). The United Nations (UN)Sustainable Development Goals 2030 Education Section aims to provide inclusive and high-quality education and promote lifelong learning opportunities (UNESCO, 2016). The learning of different learning strategies already in the secondary education phase is of particular importance (Ananiadou & Claro, 2009), that provides effective and appropriate learning outcomes for all young people and provides a basis for lifelong learning (UNESCO, 2016). Lifelong learning can complement the necessary knowledge and skills, thus, allowing to adapt to the changing world. However, the success of lifelong learning, including non-formal education, requires transversal skills. Although transversal skills are essential to be fully integrated into society and the working environment, studies show that many have not improved their skills sufficiently (Mitsea et al., 2021, Majid et al., 2012). Given the importance of transversal skills, it is important to improve them from early childhood (Rubene, 2018) and specially at school. This would allow a student to focus on personal means that enable them to enter the labour market more easily later (Heckman & Kautz, 2012). Different terms are used to describe transversal skills, such as, 21st-century skills, general competencies, key competences, soft skills etc. Transversal skills, even if developed in a specific context, should be considered as skills to be used in different disciplines, situations, and contexts (Economou, 2016) Transversal skills are cross-disciplinary and go beyond a specific area or curriculum. (Flora, 2014). However, transversal skills highlighted in different frameworks vary significantly (Rodriguez et al., 2021). Binkley analysed 12 current transversal skill frameworks and developed a 21st century skill taxonomy, that highlighted skills that would ensure each readiness for changes. Skills have been grouped according to the needs of human everyday life in today's society and categorized into four broad domains: ways of thinking, ways of working, tools for working, ways of living in the world (Binkley et al., 2010).Pellegrino and Hilton approached transversal skill categorization from the perspective of human behaviour and divided transversal skills into three broad areas: cognitive, intrapersonal, interpersonal (Pellegrino & Hilton, 2012). However, the recommendations of the European Union set out eight key competences for life-long learning, that citizens need

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for healthy and sustainable lifestyles, employment, active citizenship, and social inclusion (European Commission, 2019).

The diversity of perspectives creates difficulties, when we try to compare transversal skills across different framework structures. For example, when it is necessary to identify the most appropriate or relevant skills in a specific field.

Transversal skills in secondary school are determined by the curriculum. Gordon et al. points to a number of ways in which transversal skills can be integrated into the school curricula:

- As a specific subject. Include transversal skill development as a separate subject with specific objectives and formal means of training,
- In all existing subjects (cross-subject approach). Identifying and developing transversal skills according to the specific content of each subject,
- As extra-Curricular activities. Identifying transversal skills as part of school life and targeting different types of out-of-class classes (UNESCO Bangkok Office, Asia and Pacific Regional Bureau for Education, 2015; Gordon et al., 2009).

In Latvia, like in several other countries, the cross-subject approach is used to improve students' transversal skills. It also makes it necessary to define transversal skills more narrowly in each given subject. It is essential to take into consideration objectives of each subject and the appropriateness of the content when defining transversal skills and integrating them in day-to-day activities, otherwise students might not be able to develop them.Three broad domains of transversal skills can be identified based on the analysis of scientific literature and mathematics (Lāma & Andersone, 2021, Lāma, 2022):

- Transversal skills required to address secondary school mathematical challenges
    ‣ analyzation skills,
    ‣ interpretation skills,
    ‣ decision-making skills.
- Transversal skills required for the use of different teaching methods
    ‣ collaboration skills,
    ‣ communication skills,
    ‣ planning skills.
- Transversal skills needed for everyday life
    ‣ creativity,
    ‣ problem-solving skills,
    ‣ digital skills.

The proposed classification of transversal skills stems from the objectives set out in the curriculum, the specific nature of the day-to-day work and the content of the subject-matter of mathematics, but is not to be regarded as ambiguous.

In spite of the importance of transversal skills in the learning process, the issue of improving and assessing them is still ongoing (Rodriguez et al., 2021).

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The importance, development and assessment of transversal skills in secondary schools that is shared among students and teachers is therefore becoming an essential element.

Consequently, the aim of this study is to:

- to evaluate the secondary school student transversal skills in mathematics from students' and teachers' perspectives,
- to compare student self-assessment with teacher assessment.

Methodology

Transversal skills in secondary school mathematics were assessed by using online survey. To distribute the survey, a publicly available list of schools was found. Next, by searching through official school web pages, contacts were found for each school. The dissemination of the questionnaire followed the following steps:

- An email letter was sent to all of the secondary schools in the sample, which accompanied:
  - ▸ a teacher's questionnaire link, that was requested to be sent to all secondary school mathematics teachers;
  - ▸ a student's questionnaire link, requested to be sent to all secondary school students.
- One month later, a repeated request to participate in the study was sent to schools from which no teacher or student had shown activity.

The list of publicly available schools consisted of 183 schools, but some of them had already been reformed into primary schools and some of them had already been closed. In total, 643 secondary school students and 110 secondary school mathematics teachers from 134 Latvian secondary schools participated in the study. The study considered all ethical research standards in accordance with the General Data Protection Regulation (GDPR). The survey was anonymous and participation in it was completely voluntary.

Question Pro was used for data collection and SPSS, MS excel, and Python was used for data analyses. The online survey focused on 9 different students' transversal skills: analyzation skills (2 statements), interpretation skills (2 statements), decision-making skills (2 statements), collaboration skills (2 statements), communication skills (2 statements), planning skills (2 statements), creativity (2 statements), problem-solving skills (2 statements), digital skills (2 statements).

The online survey consisted of 19 statements, which were evaluated on a 4-point Likert scale (1-poor, 2-fair, 3-good, 4-excelent).

The assessment of each transversal skill was defined as the mean value of the corresponding statements rounded to an integer. The teachers' and students' questionnaires consisted of same statements, with the exception of students being asked to assess their transversal skills while teachers were asked to assess their

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students' transversal skills. Data was analysed through descriptive statistics. To determine the questionnaire's reliability, Cronbach's alpha values were calculated for students and teachers' questionnaire separately. Additionally, Mann-Whitney *U* test was carried out to determine the difference between students' self-assessments and student evaluation by teachers.

Results

To determine Likert's scale internal consistency, Cronbach's alpha values were calculated. Both for student questionnaire ($\alpha = 0.871$) and for teacher questionnaires ($\alpha = 0.866$) internal consistency was very good.

By analysing the mean values of the students transversal skill self-assessment, it can be concluded that students have highly valued transversals skills such as: analyzation skills ($\underline{x} = 3.26$, $SD = 0.71$), collaboration skills ($\underline{x} = 3.11$, $SD = 0.86$), communication skills ($\underline{x} = 3.02$, $SD = 0.72$) (Table 1).

Table 1. Mean value, median and standard deviation of students' self-assessment and student assessment by teachers

Transversal skills	Students' self-assessment	Student assessment by teachers
Analyzation skills	Mean = 3.26 Median = 3 St.Dev. = 0.71	Mean = 2.95 Median = 3 St.Dev. = 0.53
Interpretation skills	Mean = 2.78 Median = 3 St.Dev. = 0.81	Mean = 2.49 Median = 2 St.Dev. = 0.65
Decision-making skills	Mean = 2.95 Median = 3 St.Dev. = 0.78	Mean = 2.43 Median = 2 St.Dev. = 0.55
Collaboration skills	Mean = 3.11 Median = 3 St.Dev. = 0.86	Mean = 2.77 Median = 2 St.Dev. = 0.73
Communication skills	Mean = 3.02 Median= 3 St.Dev. = 0.72	Mean = 2.63 Median = 3 St.Dev. = 0.57
Planning skills	Mean = 2.96 Median = 3 St.Dev. = 0.76	Mean = 2.93 Median = 3 St.Dev. = 0.44
Creativity	Mean = 2.74 Median = 3 St.Dev. = 0.75	Mean = 2.36 Median = 2 St.Dev. = 0.60
Problem-solving skills	Mean = 2.35 Median = 2 St.Dev. = 0.82	Mean = 2.19 Median = 2 St.Dev. = 0.61
Digital skills	Mean = 2.79 Median = 3 St.Dev. = 0.76	Mean = 2.56 Median = 3 St.Dev. = 0.63

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These are also three only transversal skills for which the mean value of students' self-assessment exceeds 3. Teachers have highly evaluated transversal skills like analyzation skills (x = 2.95, SD = 0.53), planning skills (x = 2.93, SD = 0.44, collaboration skills (x = 2.77, SD = 0.73). Two of the three most highly evaluated transversal skills in teacher and student assessments are the same. In addition, students' planning skills, that are evaluated by teachers relatively high, are highly evaluated by students as well with mean value just below 3. This points to the fact that the opinion of students and teachers on which of the transversal skills are better developed among students are relatively similar. When comparing the median, it can be concluded that, in both the students' self-assessment and the teachers' assessment, the median of analyzation skills, collaboration skills and communication skills is 3.

There is also similar trend in teacher and student assessments, comparing least developed transversal skills. Student has assessed as the least developed transversal skills, such skills like problem-solving skills (x = 2.35, SD = 0.82), creativity (x = 2.74, SD = 0.75) and interpretation skills (x = 2.78, SD = 0.81). While creativity and interpretation skill evaluation is quite similar with other skills, students self-assessed their problem-solving skills lot lower. Similarly, teachers believe that students have less developed transversal skills like problem-solving skills (x = 2.19, SD = 0.61), creativity (x = 2.36, SD = 0.60) and decision-making skills (x = 2.43, SD = 0.55). It can also be concluded that the teachers have evaluated student problem-solving skills as lowest among all transversal skills. It should be stressed that in this study, problem-solving skills were defined as skills needed for everyday life. Problem solving consisted of two evaluation criteria: understanding the problem or students' skill to turn everyday problem into mathematical problem and reflection about problems solution or students' skill to evaluate the solution of the task.

However, it should be stressed that the use the mathematics in the day-to-day problem-solving should be considered as one of the most important skills enabling students to transfer their mathematical skills and knowledge and to use them after school graduation. It indicates to the need to focus much more on developing problem-solving skill in secondary school mathematics. It should be stressed that only for problem-solving skills the median of students' self-assessments is 2, but in teacher assessment for all three above mentioned skills (problem-solving skills, creativity, decision-making skills) median is 2. This indicates that more than half of the teachers thinks that their students' skills should be considered as poor or fair. By comparing the students' transversal skill self-assessment with the teachers' evaluation, it is important to highlight that the student self-assessment mean values for all transversal skills are higher and the median is higher or equal to that of teachers.

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It can therefore be concluded that students may have overestimated their skill level. In addition, the students' transversal skills self-assessments are more dispersed as for each skill student self-assessment standard deviation is greater than standard deviation in teacher assessment.

By analysing results of Whitney-Mann U test it can be concluded that for almost all transversal skills H0 is rejected and therefore there is a significant difference between students' self-assessment and student assessment by teachers (Table 2.)

Only for planning skills H1 hypotheses- there is a statistically significant difference between teacher assessments and students' self-assessments- are accepted. This points to the fact that in most of the cases there is a significant difference between teacher assessment and the students' self-assessment. Researchers, in their analysis of students' transversal skill self-assessment, comparing the self-assessment of university students from different fields, point to the fact that students' self-assessment is not always increasing with higher level of competence (Slišāne et al., 2022, Rubene et al., 2021).

Table 2. Comparison of students' transversal skills self-assessment and student transversal skills assessment by teachers. Whitney-Mann U test

Transversal skill	Group	N	Mean rank	Sum of ranks	U	Z	P
Analyzation skills	SSA	643	391.58	251784.00	25992.0	−4.90	0.000
	SST	110	291.79	32097.00			
Interpretation skills	SSA	643	388.88	250049.50	27726.5	−3.9	0.000
	SST	110	307.56	33831.50			
Decision-making skills	SSA	643	398.47	256219.00	21557.0	−7.1	0.000
	SST	110	251.47	27662.00			
Collaboration skills	SSA	643	390.56	251127.00	26649.0	−4.4	0.000
	SST	110	297.76	32754.00			
Communication skills	SSA	643	393.34	252918.00	24858.0	−5.5	0.000
	SST	110	281.48	30963.00			
Planning skills	SSA	643	378.98	243681.00	34095.0	−0.7	0.505
	SST	110	365.45	40200.00			
Creativity	SSA	643	393.24	252856.00	24920.0	−5.4	0.000
	SST	110	282.05	31025.00			
Problem-solving skills	SSA	643	383.07	246313.00	31463.0	−2.0	0.045
	SST	110	341.53	37568.00			
Digital skills	SSA	643	386.33	248410.00	29366.0	−3.1	0.002
	SST	110	322.46	35471.00			

*SSA – Students' self-assessment

** SST – Student assessment by teachers

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On the contrary, students are able to be aware of what really means highly advanced skills and are able to assess themselves more objectively. This is also indicated by the analyses of transversal skill relative distribution by levels. Students more often assess their skills as excellent compared to teachers (Figure 1).
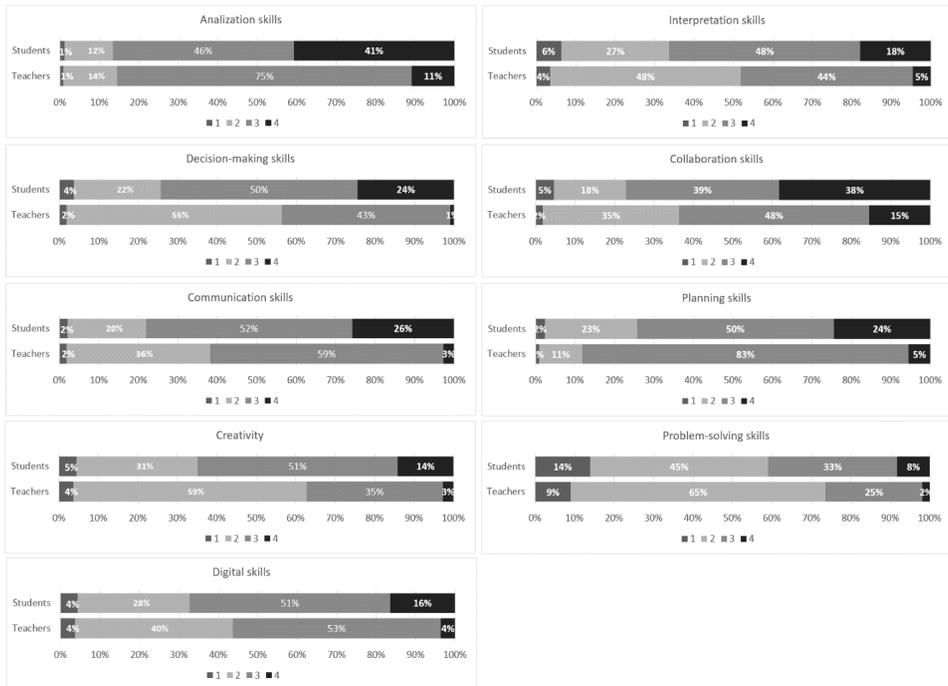

Figure 1. Students' transversal skills self-assessment and student transversal skills assessment by teachers relative distribution

While 11% of teachers note that students' analyzation skills in mathematics are excellent over 1/3, or 41% of pupils believe that their analytical skills are excellent. More than 3 times more frequently, students have assessed their analyzation skills as excellent. A similar assessment relationship is observed for the most of the assessed transversal skills, where students assess their transversal skills 3-4 times more frequently as excellent compared to teachers. However, particular emphasis should be given to decision-making skills, communication skills and planning skills assessments. While teachers consider these skills to be improved at the highest level in 1%-5% of the cases, the pupils themselves assess these skills as excellent in 24%-26%. This points to a very significant difference in awareness and could hinder the development of transversal skills. It would

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therefore be necessary to raise shared awareness among students and teachers about how well-developed decision-making skills, communication skills and planning skills should be considered excellent.

Discussion

The results of the study indicate that student transversal skills in mathematics should be improved. The results of the study indicate that there is a fundamental difference between the students' self-assessments and teacher evaluations. The level of students' transversal skills in mathematics measured by students' self-assessment is relatively high, while it is significantly lower in teacher assessment. Although the results show that pupils are able to identify transversal skills that would need to be improved, unlike teachers, a large proportion of students are unable to understand what the highest level (excellent) of assessment means.

As part of the study, statements were defined relatively broadly, yet they highlighted exactly the skill being assessed. Although transversal skills are interdisciplinary, they can be expressed in concrete action and context. Students may lack the ability to perceive and understand the skills assessment by linking it to the practical activity to be performed in the classroom. It might have influenced they perception of their transversal skills, compared to teachers, a significantly higher proportion of students assessed their transversal skills as excellent, which could indicate that students themselves are unable to identify their learning needs at school age and could lead to incorrect learning objectives. This could cause serious difficulties and knowledge gaps if it will be necessary to return to remote learning.

Further studies are needed to explain in more detail the reasons for differences in teacher and students' assessments and to understand what they are associated with. It is necessary to find an explanation at which extent high students' self-assessment is associated with the specific features of self-assessment as an assessment tool and whether self-assessment accuracy can be improved, for example by paying more attention during school hours on explaining the assessment criteria and allowing students to practice assessment themselves more often.

Conclusions

The development of transversal skills in schools is considered to be one of the key learning goals to allow students to successfully continue learning in universities, to better integrate into the labour market and to respond to the challenges of rapid change. The study assessed 9 transversal skills of students in mathematics by students' self-assessment and teacher assessment. The results of the study allow the following conclusions to be drawn:

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- Nearly all students self-assessed almost all transversal skills as good. The students' self-assessment median for of 8 out of 9 rolling skills is 3 (good) and the mean value for these skills ranges from 2,74 to 3,26 (4-point Likert scale).

- Teacher evaluations of students are significantly worse. For only 5 out of 9 rolling skills assessments, the median is 3 (good), while for the other four measured transversal skills it is 2 (fair). The mean values for all measured transversal skills are also below 3.

- Teachers' and students' assessments vary significantly. Whitney-Mann U test indicates that for 8 out of 9 measured transversal skills p value is below 0,05, that indicates that there is significant difference between students' self-assessment and student assessment by teachers. It would therefore be necessary to increase the focus on the development of students' assessment skills.

- The lowest rated transversal skill in both students' self-assessment ($\underline{x} = 2.35$, $SD = 0.82$) and teacher assessment ($\underline{x} = 2.19$, $SD = 0.61$) is problem-solving. Problem-solving skills were defined as skills for everyday life and included skills that are necessary to transform everyday problems into mathematical problems. Both students and teachers are well aware that everyday problem solving mathematically poses significant difficulties and it can lead to a theoretical mathematical knowledge that is not applicable after school graduation. This requires more attention to mathematical modelling tasks and the development of cross-curricular links between mathematics and other school subjects

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Reasons for Rapid Growth in Addition Strategy Use in 1st Grade Students

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ABSTRACT

Today's quickly evolving world requires citizens to use the tools of mathematics to make informed decisions. This involves understanding the meaning and properties of mathematical operations and the ability to use them in an intuitive and flexible manner to solve problems. Working with mathematical operations begins in early primary school and establishes a basis for future work in mathematics.

Choosing the best addition strategy to compute effectively and accurately and the ability to explain their work is often challenging for young children. They often rely on familiar and safe solutions without thinking about why they chose a certain method. The purpose of this research was to gain understanding of the factors that influence students' fluency with addition, their ability to explain their work and along with that gain flexibility and confidence in mathematics.

This is action research, that involves 16 first grade students, all of whom were struggling with math at the beginning of the school year, but some of them made great gains in their ability to solve mathematics problems involving addition. The students with high performance improved in their ability to explain their actions verbally and use multiple strategies and choose appropriate and effective strategies for each task.

The aim of this research is to understand the reasons for the rapid improvement of the high performance subjects and compare it to the lower performing groups in order to help improve understanding of number operations for all students. The research involves observations and written work over a school year, and individual interviews with the students. Data about the home environment was collected from parents. The research shows that a tendency for rapid progress is due to active participation in guided class discussions and use of advanced strategies for routine tasks.

Keywords: addition strategies, calculation speed, mathematical reasoning, primary school mathematics

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Introduction

In the previous year's national 3rd grade math diagnostics 25% out of all students in Latvia could not correctly add two two-digit numbers (National Centre for Education of the Republic of Latvia, 2022). What will happen with the mathematical competence of these students we can only presume, but without effective intervention it will not be satisfactory. The reason for this alarming lack of basic math operation skills undoubtedly takes root in early math, and we can assume that it is a product of teaching math through instrumental understanding rather than relational understanding (Skemp, 1987; Skemp, 2006; Boaler, 2015). What happens in the 1st grade with basic skills is fundamental and has to be looked at seriously. Since research has shown that the number of different strategies children understand and use predicts their later learning (Clements & Sarama, 2014), a closer look at the situation was needed to improve these skills.

The National Council of Teachers of Mathematics [NCTM] and other evidence-based essential math teaching practices are described below.

Teaching emphases

1. During lessons students model each new concept (or whenever it is necessary for them) with manipulatives, visuals and descriptive representations and make connections between them (NCTM, 2014; Smith et al., 2017). Five types of representations are used to gain understanding of a concept: physical, visual, contextual, verbal and symbolic (Cramer, 2003; Huinker, 2015; Huinker & Bill, 2017; Lesh et al., 1987). The trajectory of representations on how to build understanding of each concept is from concrete models, through pictorial representations and finally introducing abstract form (Bruner & Bruner, 1966; Lesh & Doerr, 2003; Hurrel, 2021).

2. To develop number and operational sense:
   - Deliberate practice to conceptually subitize (Clements & Sarama, 2014; Walle et al., 2018) using subgroups of dots to learn how to reason about quantities in flexible ways since "subitizing supports children's development of number sense and operation sense; it engages children in decomposing and composing numbers as a basis for reasoning strategies with basic facts for addition" (NCTM, 2020, 84).
   - Learn basic number combinations through understanding not memorization (Clements & Sarama, 2014; NCTM, 2020).

3. Explain and justify: the teacher focuses on letting students explain their thinking and compare it to the way their peers are thinking. Students know that in this classroom different approaches are valued, so they try to think of alternative (maybe not yet the most effective) ways of reasoning (NCTM, 2014; Smith et al., 2017). Students learn to judge which ways are the most

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effective or most comfortable for them. "Classroom discussion must move beyond children providing short answers to direct questions toward explaining and justifying their reasoning and answers, which not only benefits individual children's learning but also contributes to the shared learning of the classroom community" (NCTM, 2020, 74).

4. Help students notice and use mathematical structures (NCTM, 2020) by organizing the tasks so there are visible patterns (Fan et al., 2015). Noticing how a previous problem is similar to another one can help to figure out the new one. Practice by looking for patterns in 100's chart and other number and figure arrangements. By noticing structures children see that mathematics make sense and that their ideas are valued and worth exploring and discussing. Students learn to observe, make educated guesses and generalizations.

5. Teach that there are specific different addition strategies (Clements & Sarama, 2014; Walle et al., 2018), see the possible strategies with clarifications are provided by the authors in Table 1.

Table 1. Addition strategies

Represents addends with manipulatives (fingers, base ten blocks, two colored counters and others) and counts	▸ from 1 ▸ count on from one addend
Counting on	▸ counting on from the first addend ▸ counting on from the largest addend
Making a 10	▸ e.g. 8 + 7 = 8 + 2 + 5
Memorized addition facts	
Reasoning from known addition facts	
Adding tens and adding ones	▸ with manipulatives ▸ without manipulatives
Mix of strategies	▸ when adding two-digit numbers, knowing the ten's sum, adding the ones by counting on ▸ adding tens by counting on, and then adding the ones by making a ten ▸ etc.
Personal strategy	▸ counting by twos ▸ 5 as a benchmark, e.g. 8+7 = 5 + 5 + 3 + 2 ▸ etc.

6. Build procedural fluency from conceptual understanding (NCTM, 2014; Walle et al., 2018, Burns et al., 2015; Smith et al., 2017).

All of these are evidence-based effective practices and many students benefit from them greatly, but still others continue to struggle with basic operations. The authors searched for an answer as to why this is so by posing the following questions:

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1. Does multiple strategy use indicate an overall better performance in addition?
2. What might be the reasons for rapid growth in addition strategy use?
3. What does a student's speed at solving addition problems tell us about their addition skills?

Methodology

This is an action research that was conducted by an educator with the guidance of two researchers. This form of research was chosen because the impact for the teacher and students is immediate and corresponds to the specific setting and problem (Efron & Ravid, 2019). The research originated with a math teacher who implemented into her teaching all of the mathematics teaching practices described in the subsection "teaching emphasis". Still, some of her 1st grade students did not show satisfactory addition skills.

In the beginning of the 2021./2022. school year the first grade math teacher made an observation that 16 out of 48 of her new students might have difficulties in math in the coming year based on their math skills and knowledge in September. At the end of the school year from May 24th to 27th a rigorous diagnostic of their addition skills was conducted. During the assessment the teacher offered 11 addition problems one at a time for the pupil to solve, using manipulatives or paper and pen as needed. The process was videotaped and analyzed (see Figures 1 and 2).

Figure 1. A screenshot from the diagnostic process video

Figure 2. The setting

Permissions to videotape, publish pictures and participate in the research were obtained from the parents of the students. The problems were later divided in two parts: 6 of the addition problems had been covered in the 1st year curriculum (consisting mostly of one digit addends). These were **routine tasks**. Five of the problems dealt with two or three digit numbers or problems that were

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not taught yet. These were **challenging tasks**, to test the childs' ability to make connections and transfer his skill to a new settings. The tasks were designed so the pupils could demonstrate different strategies (see Table 2).

Table 2. Addition problem categories

routine tasks						challanging tasks				
7 + 2	3 + 8	8 + 5	8 + 8	8 + 9	24 + 6	17 + 6	33 + 46	15 + 17 + 15	12 + 28	57 + 36

Note. Highlighted are problems not covered in the 1st grade program.

Two indicators were identified; whether a child was able to make connections and whether they chose an effective strategy. Based on their performance on the diagnostic task (see Figure 3), the children were divided in three groups: children with low performance (if both indicators were below 50%) in their math skills ($n = 7$), average performance ($n = 5$) (if at least one indicator was 50%) and high performance ($n = 4$) (if both indicators were above 50%). The first indicator showed students' ability to solve addition problems that were not taught in class. This indicated the ability to make connections and transfer knowledge. If a child was able to solve 28 + 12, based on the skill to add one digit addends so a new ten is formed, it was decided that he can make some connections; if a child could solve 57 + 36, a more complicated situation with regrouping, then it was categorized that the child can make connections. The second indicator was the students' effective use of strategies. A strategy was deemed effective if 3 requirements were met: first, the strategy is objectively effective; second, the child was fluent in using the strategy; and third, the answer was correct.
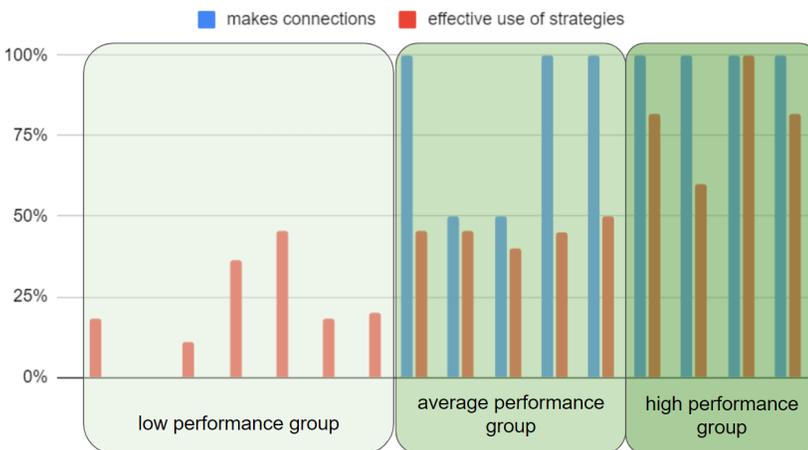

Figure 3. Grouping principle

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Results

1. Does multiple strategy use indicate an overall better performance in addition?

In the Table 3 we can see a tendency: the higher the performance group, the higher the percentage of correct answers and better the ability to explain one's reasoning. It is not clear if because of the ability to explain one's reasoning the child can effectively use strategies or the other way around. Regardless, we can reason that it is more likely that if a pupil can explain his reasoning, he will be able to make connections, be more precise in his calculations and use strategies effectively.

Table 3. Average student demonstrated skills in the research setting

Group	Low performance	Middle performance	High performance
precision	72%	77%	98%
ability to explain one's reasoning	36%	40%	88%

Note. Precision refers to correctly solved addition tasks. The ability to explain one's reasoning indicates whether the student could recall and understandably explain or show his addition strategy.

Figure 4 shows how many different strategies children used to solve the 11 given addition sentences. In this research, the high performance group used more strategies than the low. The reasons for low strategy count might differ.
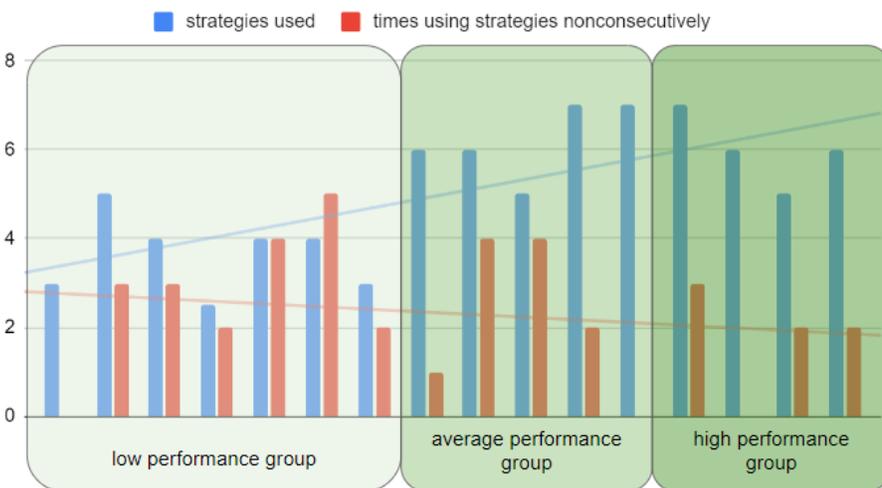

Figure 4. Strategy use

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For example, the 1st student felt safe with using the counting-on strategy and used it with various success for almost every problem. But, if it is because she felt safe with it and for that reason did not learn new strategies provided in lessons, we can only speculate. The 2nd student had a poor understanding of place value, that did not allow him to use strategies that relied on this knowledge. The 3th student tried to use strategies that she did not really understand why they worked, so fell back to using the simpler strategy of modeling: make the numbers out of manipulatives and count.

The other data visible in the graph shows how many times the students used a nonconsecutive strategy. This in the design phase of the research was thought to show the flexibility of strategy use since the child did not use the previous strategy, but chose another from his strategies. We can see that more "jumping" in between strategies happened in the low and average group. We can reason that since the higher group uses more strategies it is less likely they will use any previously used strategy. There is another possibility that occurred looking at the data. There are children who, when facing a math problem, do not mentally look through their arsenal of tools (strategies) and then decide for the best one in the situation. Instead they start doing something without giving it a thought if it is effective or the best strategy. They are just keen to get a result, that led to chaotic "jumping" through their strategies without deliberation. This might be the story of the 5th and 6th student.

2. What might be the reasons for rapid growth in addition strategy use?

Children in the higher performance group seemed to have more confidence in math (see Table 4). The confidence was measured from the parent questionnaire and from student comments. This evaluation is by nature subjective. If a student has low confidence he was scored 0, if average confidence: 0.5, if great confidence: 1.

In the second row of Table 4 we can see that it is more likely that a child will have higher performance at the end of a school year if he participates in class discussion. This means he uses math language, explains his thinking to others, listens to other solutions and all in all is an active participant in learning. If a student participated in classroom discussion only if asked directly, he was scored 0, if participate rarely: 0.5, if participated often: 1.

Table 4. Teacher observations in classroom settings. The average scores of each group.

Group	Low performance	Average performance	High performance
participation in class discussion	0.36	0.6	0.88
confidence in math	0.5	0.6	0.88

Note. Both indicators were measured in a scale 0 to 1.

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Gathered data from the home environment showed a childs' additional math learning at home. The use of applications and games related to mathematics did not show any correlation to skills. Some children from the low, average and high performance group did extra learning at home and some did not. Contrary to what was predicted in this sample, school attendance data showed no relationship to performance level (see Table 5), although in individual cases both extra learning (10th &14th student) or high attendance might be one of the reasons for higher performance (or low attendance for low performance: 2nd, 3d & 6th student).

Table 5. School atendance

Group	Low performance							Average performance					High performance			
student number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
missed lessons	101	134	160	47	63	142	36	129	83	158	77	62	61	189	117	108
average	97.57							101.80					118.75			

Note. The number of overall missed lessons including math lessons.

3. What does addition sentence solving speed tell about addition skills of a pupil?

When analyzing the videos, the time for completing each task was measured, from the moment the task was given until the student gave the answer. The overall average speed was higher for the high performance group (see Table 6). The authors would like to point out that the difference between time needed to solve routine and challenging problems is significantly higher for the low group. One of the reasons we observed was that the routine tasks with smaller numbers allowed more basic strategies (representing addends with manipulatives and counting them or counting on), that were either unsuccessful or very time consuming for the challenging tasks.

Table 6. Average addition problem solving speed in seconds

Group	Low performance	Average performance	High performance
routine tasks	21.13	21.74	12.22
challenging tasks	83. 42	52.02	36.52
difference	62.29	30.28	24.29

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When looking at separate situations (see Figure 5), there were children from the low performance group who solved the easy tasks even faster (up to 12 sec.) on average than children from the high group. These same children solved the hard tasks significantly slower. The reason why the high performance group children in this research solved easy problems slower could be because they used more advanced strategies (e.g. making ten, reasoning from a known sum) in situations where the basic strategies may give faster answers, but in the long run the children using the more advanced strategies in easy tasks and taking more time, had better understanding in using them in general and were comparatively faster in challenging tasks.
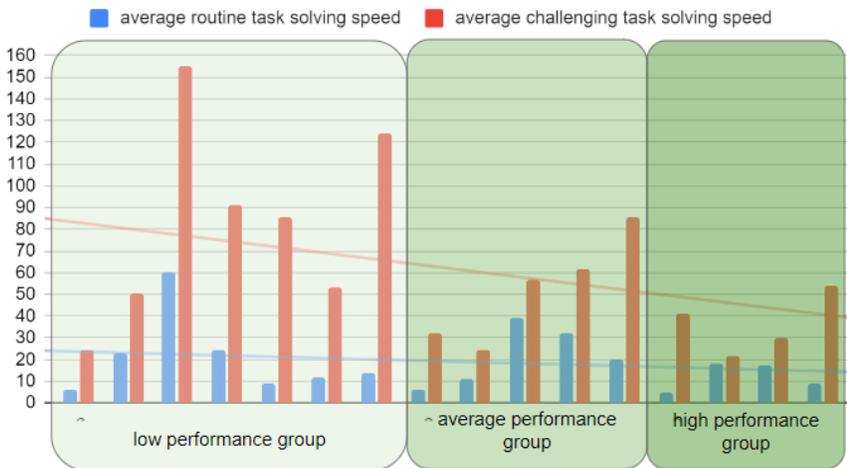

Figure 5. Average routine and challenging task solving speed in seconds. Individual students

Discussion

Our research confirmed that multiple strategy knowledge and use is advantageous in early math (Clements & Sarama, 2014), because the higher performance group used more strategies. Nonconsecutive use of strategies is not an unequivocal indicator, and is dependent on the order of the tasks, not just selection of most effective strategy and is not a certain indicator of fluency in this research. Understanding and using multiple strategies is important not just in the early years of learning math, but predicts their later learning (Clements & Sarama, 2014).

Not surprisingly this research confirmed that it is more likely that a child will have confidence in math if he is in the higher performance group, since we tend to like the things we are good at (Kohn, 2018). It is more likely a child will have better performance in mathematics if he actively participates in classroom

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discussions and peer discussions, since we understand better the concepts we talk about (Harlen & Qualter, 2018). School attendance and home environment were significant only in individual cases, but in this research sample no general tendencies were illuminated.

The most exciting observations or conclusion from this research was when looking at speed. As Jo Boaler (2015) pointed out math is not about speed, which is a widespread assumption, and if speed is an incessant part of math teaching and learning we can overlook slower and deeper thinkers. The data in this research shows that overlooking slow thinkers is not the only problem with speed in math, but can give teachers false security in children's math competence. This illuminates the necessity to know how a student gets to an answer, not just if it is correct.

For the classroom teacher this indicated:

1. A teacher observing that a child produces fast and precise answers might conclude that they do not need any intervention and are overlooked in the sense that they do not develop advanced strategy use and reasoning skills, so causing problems later on. Easy addition problems do not demand reasoning, only applying known algorithms. A child might lose the opportunity to master more advanced strategies if they are allowed to use only basic strategies.
2. Speed should not be the main component in mathematics, but rather the "how" and "why" and the efforts to find the most effective strategies and explaining one's reasoning.

Further research would be beneficial in discovering why some students do not use advanced strategies, and how to lead them to fluency in different strategies, because research shows that the use of more strategies is beneficial.

Additional data is needed to specify the reasons why some students become high and some remain low performers.

Conclusions

Most of the students who were in the low performance group had different gaps in their skills or knowledge that did not allow them to do the challenging addition tasks. For example, one of the students had not developed understanding of place value. Another child tried to use strategies he did not understand and another could not break the habit of adding by counting by ones and other made mistakes in rote counting. Each of these problems or gaps require different intervention strategies.

The authors see a possible two step solution:

1. Diagnostic can not just rely on correct answers, as the teacher can not see the thinking process or strategy. For this kind of diagnostic preliminary

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work in the classroom is necessary: children must have been exposed to a teacher modeling their thinking and experience and practice explaining one's reasoning and learning to understand their classmate's strategies and thinking.

2. Early and continuous individualized intervention is necessary that is focused on the specific knowledge or skill gaps of each student. The emphasis is on *continuous.* It should be performed until the gap is fully closed, because some interventions and small after class individualized work did occur for the students in this research, but not systematically. The problem in the early math classroom is that the lack of fluency can be due to a lack of different skills for various students. The basic skills do not develop fast, time and regularity is necessary but not for all students and not for the same skill.

Aknowledgment

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Synchronous Online Learning for Solving Physical Problems in a Team: Challenges and Opportunities

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ABSTRACT

Today's challenges make us change and sometimes, for example, in critical situations, forcefully transfer studying to digital spaces. One of the main objectives raised by educators is ensuring effective, collaborative interaction between learners and teachers or groups of learners involved in the educational process (Verstegen et al., 2016). E-learning is not an exception, there interaction and collaboration are also very important (Stadler et al., 2019). This raises a key question: how to ensure that interaction and collaboration are upheld in distance learning? To find an answer to this question qualitative case study was chosen. The case study considers the interaction and collaboration in solving physics problems. The aim of the research – to find in what ways does coherence between the Collaborative Problem Solving construct and various interactions help the teacher to strive for effective education of students during synchronous learning. Results show that cognition and practical activities are inseparable, when solving problems and cooperating in virtual environments. In addition, solving life-related problems in a virtual environment is one of the most effective ways to empower students to act. The findings of this research can be beneficial to teachers of natural sciences when striving to enhance distance learning in crisis and other extreme situations. It can also be an incentive to change attitudes towards the limitations of distance learning.

Keywords: Collaborative Problem Solving, Interaction, Online Learning, Synchronous E-Learning, Problem based learning, 3C3R PBL model

Introduction

Interaction and collaboration are considered to be one of the most effective forms of learning that are important in developing essential 21st century skills (Andreasen & Nielsen, 2013; Fung, 2017; Herayanti et al. 2019, Timonen & Ruokamo, 2021). Therefore, today the main goal of educationists is to ensure

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effective learning based on cooperation and interaction between learners, teachers, and all participants in the educational process (Verstegen et al., 2016). Cooperative learning creates essential conditions for learners to be active participants in learning. It is like a "rotating spiral" – practical activities of cooperative learning enable students to act, discuss, discuss, research, solve problems (Garrison, 2017), and active participation of learners in learning activities and joint responsibility for the common group work encourages them to learn cooperatively (Ruhalahti et al., 2018). This kind of learning based on active interaction and collaboration can be considered as a unique learning model for developing students' cognitive and social skills and achieving deep and meaningful learning (Timonen & Ruokamo, 2021).

However, in the context of today's challenges (pandemic and other critical situations), learning is often forced into digital spaces. It is necessary to adapt to new technologies, new solutions, new teaching and learning methods. Impactful use of IT not only occupies an important place in today's learning process, but also opens a wide range of learning opportunities (Forkosh-Baruch & Avidov-Ungar, 2019). Virtual learning environments, social networks, virtual museums, educational tours, images conveyed by surveillance cameras can be purposefully adapted for learning. However, some researchers criticize learning in the digital space both because of the social isolation of students and because of the technical problems that may arise (Kolbaek, 2018). Despite that, there is a real consensus that interaction and collaboration in the digital space must remain important elements of learning (Stadler et al., 2019), it is necessary to maintain social presence together in the digital space between learners and all participants in the educational process (Cheung, 2021). A fundamental question arises: how to organize learning in the digital space so that it is based on interaction and collaboration? What forms and methods of teaching should be used to bring learning in the digital space even closer to F2F learning in the classroom? And in general, is it possible?

One of the widely used forms of learning in virtual space is synchronous learning (Kwok Chi Ng 2007; Pacheco, 2020). These are real-time lectures, webinars, live broadcasts on social networks, chats where learners have the opportunity to ask questions, complete tasks given by the teacher and are encouraged to communicate and collaborate in groups (Strang, 2013). According to researchers, real-time synchronous interaction not only promotes student engagement in the learning process, but also provides an opportunity to interpret complex learning material, while also allowing teachers to give instant feedback when interacting with students (Hrastinski, 2008; Strang, 2013; Watts, 2016, Francescucci & Rohani, 2019). Although synchronous communication tools help learners and teachers directly communicate and collaborate (Giesbers et. al. 2013), synchronous teaching is much, much more than just imagining that a "talking head" on

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a screen is already synchronous teaching. According to educators, the teacher's task is first and foremost careful and consistent teaching planning. Special attention should be paid not only to the selected video conferencing tools, but also to the possibilities of learning through synchronous cooperation and exercises that promote student activity (Kwok Chi Ng, 2007). Therefore, the researchers emphasize that due to insufficient attention to the intricacies of synchronous teaching planning, the lack of face-to-face (F2F) student-faculty or student-to-student communication remains a major issue in digital learning (Francescucci & Rohani, 2019). More effective ways to improve student engagement in digital learning environments are needed (Watts, 2016; Francescucci & Rohani, 2019). And for online education to be recognized as equivalent or at least close to traditional face-to-face (F2F) classroom learning, the quality of education in the digital space must be continuously improved (Palvia et al., 2018). So, there is no doubt that synchronous learning in the digital space plays an important role and deserves special attention (Timonen & Ruokamo, 2021), and planning and premeditated learning activities are a key prerequisite for effective collaborative learning (Anderson et al., 2006). However, it is still not completely clear what teaching strategies and methods to choose for synchronous teaching in digital spaces. This remains an important field of research in education (Timonen & Ruokamo, 2021). So, what teaching strategy to choose when organizing synchronous teaching?

Dialogue, reflection, interaction, and collaboration are important elements of student learning (Dewey, 1916; Hmelo-Silver, 2012; Lazonder & Harmsen, 2016), therefore, to achieve integration, some educators try to integrate them using the PBL strategy. Several advantages of PBL application emphasized in the literature are the development of critical, reflective, and creative thinking (Kolbaek, 2018). Possible shortcomings are also revealed – individual problem solving may limit individuals' ability to solve a problem, or the solution method of Problem Solving may not be immediately obvious to the person seeking to solve the problem (OECD, 2010). However, if we take the view that interaction and collaboration are one of the most important parts of effective learning (Andreasen & Nielsen, 2013; Fung, 2017; Herayanti et al. 2019), and problem-based teaching encourages learners to think in solving problematic situations and to search for answers to problematic questions, it can be assumed that the organizing learning using the PBL strategy in the digital space will also encourage student interaction and cooperation among all participants in the educational process. Such learning can be referred to as collaborative problem solving (CPS), which plays a vital role in today's world (Griffin, McGaw, 2012.). CPS skills are considered critical and necessary not only in various educational contexts, but also when working in teams to improve teamwork efficiency and quality, decision-making as well as employee creativity. Such digital learning is characterized not only

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by collaboration (Garrison et al., 2000) but also by creating meaning, while working towards a common goal. Active participation, communication and commitment to the coaching group promotes collaborative learning (Ruhalahti et al., 2018). However, some researchers question the effectiveness of applying the CPS strategy in the digital space, arguing that CPS is not as useful for learners in the digital space as it is for students who solve problems in the F2F classroom (Kolbaek, 2018). The lack of motivation of students to solve problem situations is emphasized exclusively (Kolbaek, 2018). Another aspect that poses a challenge is the creation of a problem or problematic situation. Teachers need to be careful when creating problems and should pay attention to the level of difficulty of the problem. Easy problems lead to finding a solution without any effort, while too difficult problems can lead to frustration (Yurniwati & Dudung, 2020). So, how should problems or problematic situations be formulated and presented in the digital space so that students are motivated to be active and solve problems collaboratively?

The reflections presented in the introduction and the discussion questions raised can serve as an incentive for educationists to delve even deeper into synchronous teaching strategies, create new methodologies and look for new ways to ensure interaction and cooperation in synchronous teaching in digital spaces.

Method

How to ensure that interaction and collaboration are upheld in distance learning? To find an answer to this question qualitative case study was chosen. The case study considers the interaction and collaboration in solving physics problems.

The aim of the research – to find in what ways does coherence between the Collaborative Problem Solving construct and various interactions help the teacher to strive for effective education of students during synchronous learning.

The case is: Interaction and collaboration for solving physical problems in a team in synchronous online learning.

Participants: 15–16-year-old high school students (2 student groups of 4 students each (9th grade) and 2 student groups of 4 students each (10th grade). Students' participation in the study was voluntary – students who are interested in physics participated and wanted to solve challenging physics exercises as well as real-life problems in teams.

Research ethics

Students' participation in the study was voluntary. The research idea was clearly defined for the students, and all the procedures that would be performed during the research had been discussed. After receiving the consent of the

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students, a meeting was organized for their parents. During the meeting, the idea of the research, its progress and benefits were discussed. After coordinating the details, the parents of the students participating in the study signed informed consents for their children's participation. All collected data is saved to an external drive. Data is non-accessible, confidential, and protected.

Activities and their duration

MsTeams video conferencing tool was used for synchronous learning.

All learning activities for all groups were the same. Meetings with students were organized for 2 months, once a week. These were informal lessons/consultations aimed at developing cooperative physics problem solving skills and deepening physics knowledge.

To avoid fatigue, classes with students lasted 30 – 40 minutes without interruption. because online synchronous learning, especially during longer sessions, requires energy and engagement (Pacheco, 2020).

Research questions

- How to formulate and present problem-based learning (PBL) tasks to encourage interaction and collaboration?
- Why does using PBL strategy during synchronous teaching promote student interaction and cooperation?
- What characterizes different interactions in collaborative problem solving in synchronous learning?
- This qualitative Case Study research was implemented in several stages:

Adaptation of research material for synchronous teaching

Creating tasks based on the Collaborative problem solving (CPS) construct (Griffin, Care, McGaw, 2012) and 3C3R PBL model (Hung, 2006).

CPS construct was chosen for several aspects:

First, when implementing the CPS construct, two or more people participate in the activities, and the successful implementation of the activities requires the cooperation of team members, sharing of problem-solving ideas, monitoring, and analyzing the problem-solving process, explaining cause-and-effect relationships, proposing strategies for solving the problem in the team (Hesse et al., 2015).

Second, in the CPS construct, the relationship between social and cognitive abilities in implementing the CPS construct is very strong (Griffin et. al. 2012). Social skills play an important role not only in solving problems together but are also a distinctive feature of many cooperative activities. Cognitive abilities, in turn, have a lot in common with classical problem-solving methods, based on which problem solvers look for answers to problematic questions and present the decisions made with arguments.

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The planning and activities of the synchronous teaching were chosen according to the 3C3R model (Hung, 2006).

This 3C3R model was chosen because of its broad scope for integrating content and activities (Hung, 2006), e.g., various problematic real-life situations, the solution of which requires the interaction of learners, requires social, communicative, cognitive, and cognitive abilities.

Second, for teachers, the 3C3R model provides a conceptual framework within which they can more systematically and effectively formulate and design problems (Hung, 2006).

Third, the use of the 3C3R model provides a conceptual framework for designing PBL problems and evaluating their relevance and effectiveness (Hung, 2006).

Synchronic lessons with the students

Based on the CPS construct and the 3C3R model, tasks and activities were placed on six slides and named "Six slides principle for synchronous teaching". The presentation of the slides is shown in the picture below (Fig. 1).
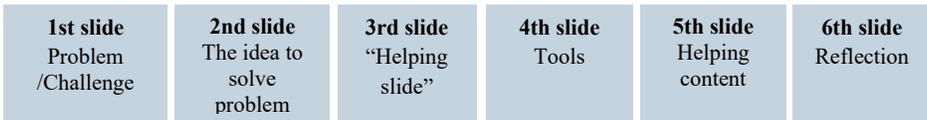
1st slide	**2nd slide**	**3rd slide**	**4th slide**	**5th slide**	**6th slide**
Problem /Challenge	The idea to solve problem	"Helping slide"	Tools	Helping content	Reflection

Figure 1 Six slides principle for synchronous teaching

Data collection and analysis

The following methods of data collection were chosen – observation, researcher's notes, semi-structured interviews in focus groups, lesson videos, student reflections. The coding of the research participants is presented in Fig. 2.
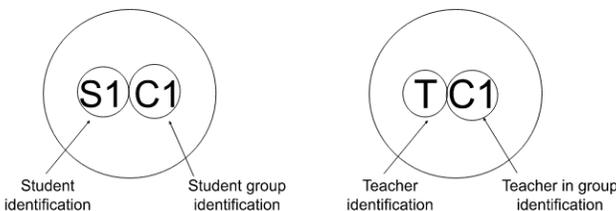

Figure 2 The coding of the research participants

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All video sessions were recorded and later transcribed. MAXQDA2020 software was used for data processing. The collected data was coded and analyzed according to the distance learning model A Model of E-Learning (Anderson, 2004), the CPS construct (Griffin, Care, McGaw, 2012) and the elements of the 3C3R model (Hung, 2006). Attention was focused on the following interactions during synchronous teaching: student-teacher, student-student, student-teaching content, teacher-content. These interactions used in the study were defined according to A Model of E-Learning (Anderson, 2004).

Table 1. Interactions according to A Model of E-Learning

Interaction	Description
student-teacher	Multifaceted student-teacher communication and collaboration through synchronous delivery of learning materials, organizing discussions, F2F communication, and other real-time activities.
student-student	Learning together based on the ideas of constructivism and connectivism, promoting the cognitive process and research, helping to accumulate knowledge together based on the experience of the learning community and developing cooperation skills using technological solutions for learning in a virtual environment.
student-content	Learning opportunities using interactive tools (real-time explorations, real-time video presentations, interactive tasks, virtual labs, etc.). This interaction is focused on meeting the individual learning needs of learners (providing targeted learning support, quick feedback, orientation to further learning).
teacher-content	The process of creating and/or updating educational content (educational materials/resources, educational objects, interactive tasks) and educational activities related to the implementation of the content (research, creative tasks, etc.).

Results

The results of the study show that the tasks and activities created based on the CPS construct (Collaborative problem solving construct (Griffin, Care, McGaw, 2012) and the 3C3R problem-based learning (PBL) model (Hung, 2006) in organizing synchronous teaching using the "Six slide principle for synchronous teaching" activate all studied interactions connected by common elements (Table 2).

Observational data show that to promote interaction and cooperation-based teaching, teacher-content interaction is extremely important, not only in the initial stage of planning, creating problem situations and predicting activities, but also during the entire synchronous teaching.

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Table 2. Elements connecting interactions

Slide	Description	Interaction	Connection
1st slide Content / Problem / Challenge	A contextual problem or problem situation related to the teaching content is presented	Teacher – Content Teacher – Student Student – Content	Real-life experience, problem situations, challenges with questions starting with How? Why?
2nd slide The idea to solve problem	Students present ideas on how to solve the problem.	Student – Student Student – Content	Mindmap, brainstorming, etc.
3rd slide "Helping slide"	A hint given by the teacher that directs the students to the solution to the problem	Teacher – Content Student – Content Student – Student Teacher – Student	A picture with help elements without clear instruction and exploring idea for the solution.
4th slide Tools	Teacher-provided tools for the test that will help answer the given question	Teacher – Content Student – Content Student – Student	Tools for the experiment that will help answer the given question. Tools are provided in a variety and more than necessary, which can be found at home.
5th slide Helping content / learning material	Help provided by the teacher: teaching content, description, links, etc.	Teacher – Content Student – Content Student – Student Teacher – Student	Texts, explaining, knowledge which students must connect with their experiment results
6th slide Reflection	Student and teacher reflection	Student – Student Teacher – Student Teacher – Content	Reflection, important questions like: Why? What makes you decide about it? Comment your choice, etc.

Teacher – content interaction

The problem arising from the context – a prerequisite for encouraging student activity

The observation data of the conducted research show that teacher – content interaction is a very important element of synchronous teaching. The success of the entire synchronous teaching depends on the choice of the teacher, the challenge presented, the organized activities and moderation. The context and the resulting problem situation are extremely important for students' interest and engagement in synchronous learning. For example, if the lesson took place before Christmas or another holiday, an example of a problematic situation could be the following: a family celebration, a large dinner table, laughter, shouting... Suddenly, a person chokes without speaking. How to help him? This simple problematic situation not only actualizes the problem itself, brings it closer to the students' life experience, but also encourages students to think, discuss, and explain the observed phenomenon based on the laws of natural sciences. Therefore, the biggest challenge for

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the teacher is to find phenomena or teaching objects from the surrounding environment that would be relevant to the students and would pose a challenge. It would be possible to model problematic situations, and after modeling the students could study them at home using the simplest tools.

Cognitive conflict – an incentive to think and cooperate

The analysis of the video material of the lessons suggests that one of the ways to promote the interaction between students is the cognitive conflict that arose during the exploration (... *But it should work, if there is a lot of air here, press it and it should push the ball out. I don't know why it doesn't work for me ...*) S1C1. It was noticed that the interaction between students intensified significantly while searching for a solution to this problem.

Hints – silent aids that encourage student-student interaction

The analysis of activities in synchronous lessons revealed that after presenting a problematic situation, the teacher must be ready to give hints to the students, which would allow the students to change the direction of thinking and encourage them to look at the problem from a different angle. Observational data revealed that visual material works very well for this, e.g., pictures, diagrams, etc. All this activates the student-student interaction and helps to achieve the set goals.

Teacher – student interaction

The study revealed that teacher-student interactions based on simple agreements with students (... *Let's immediately agree that you will speak. okay? Of course, I will also talk to you, but you should talk more. OK? ...*) has a positive effect on student-student interaction. The analysis of the videos shows that the students try to stick to the agreements, get involved in the discussions themselves and try to involve others (... *S3C1, what do you think? ...*) S1C1, (... *Maybe we should try, as you said? ...*) S4C3, (... *What if we did, what you said? ...*) S2C3.

The teacher's "withdrawal" and "timely return" are prerequisites for students to interact

Monitoring data shows that the teacher's unexpected "retraction" (... *For three minutes I'm offline ...*) TC3, (... *it's your decision ...*) TC1 disturbs students, but at the same time it activates student cooperation, helps students get more involved in independent problem-solving activities, encourages sharing of ideas. And the teacher's "timely return" and showing that he was interested in the students' decisions (... *What are you doing? What did you come up with? ...*) TC1, (... *Tell me, very interesting ...*) TC4, (... *How unexpected ...*) TC2 encourages interaction even more. The teacher's "withdrawal" and "timely return" are effective means to keep students active during synchronous teaching.

Do it together with the students – keep the intrigue

The research data show that the presence of the teacher with the students, involvement in their research activities, arouses the interest of the students

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(... And you, the teacher, will you wait until we are done and do it after or? ...) S3C1, *(... I'm doing the same as you... we'll see how well we succeed ...)* TC1 During this kind of interaction, students feel relaxed, trust emerges, all members of the group try to get involved in the activities, and the desire to look for even better options for solving the problem also appears *(... But, here, it is possible to come up with more ...)* S2C3, *(... maybe I'll think a little more ...)* S4C4.

Student – student interaction

Delve deeper, share and be a team member...

The results of the study revealed that the interaction between students when planning activities according to the presented model is exceptional. Students strive to be important team members. Before sharing something with the members of their group, they first delve into the topic, read the material presented, individually analyze the problem and only then start discussions *(... I think our team's tactics are quite good, first we each individually looked at what we think about it, what we know, what we understand, then we discuss ...)* S4C3 *(... In the beginning, we looked individually at what we know and can solve and then we talked, discussed ...)* S3C4, *(... we checked our knowledge, we said our opinion ...)* S1C1 The students identify the need for individual analysis of the problem as one of the very important things *(... I think it is very important to clarify what you want to say, because if you only come up with thoughts and attack other people for theirs and say maybe yes maybe so. Then, there will be such a long discussion ...)* S2C2. Here you can also see the students' responsibility for the team's overall activities *(... If you formulate the answer clearly to yourself, what you want to say, those discussions happen very quickly somehow ...)* S1C2 Research data also revealed that when working in a team, students are open to listen, accept the opinions of other team members and negotiate *(... I think you just need to listen to each other... be able to accept it and say your opinion ...)* S3C3, *(... often while making a decision we either state ours, listen to others, change our minds, or we just agree ...)* S2C1. Such students' reflections suggest that being together is very important to these students.

A cohesive team – an essential step towards successful collaborative problem solving

The research revealed that the composition and size of the team is also very important to the students *(... If we had more people, maybe it would be more difficult or if there were fewer people, maybe it would also be too difficult ...)* S4C1, *(... now that is the optimal amount – the relationship is pleasant and communication is easy ...)* S1C1, *(... what is important is which group and which people you are with ...)* S1C4. Observational data revealed that to solve a problem in team cooperation, students often discuss several solutions to the problem, which help to find the answer. Therefore, it is necessary that the work in the team goes smoothly *(... you*

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just need a non-confrontational team that functions properly in solving problems ...) S3C4. In a cohesive team, when someone from the group gives his answer, he is listened to (... *I think the most important thing is to listen, to be able to listen ...)* S1C1, (... *we listen to other ideas...Very, very, very good thing)* S2C2, and when examining possible ideas for solving the problem, all group members look for compromises and a final solution (... *You look for compromises and you don't think that your answer is the right one ...)* S3C1, there is a discussion if necessary (... *When there is actually a discussion and either common solution is reached or the answer is found during practice, you can compare whose answer was correct ...)* S1C1. So, being in a cohesive team means being part of a team.

"Fear of making mistakes…" or "We learn from mistakes…"?

The research revealed that in a harmonious team, not being afraid to make mistakes (... *it is important to understand that you can make mistakes …)* S1C1, (... *and I decided that maybe I could do it without them, I failed. I had to try it and find out who is right and who is wrong. ...)* S3C1 and acknowledgement of the ideas proposed by other team members to solve the problem (... *I didn't think of that... How did you come up with such a good idea? ...)* S3C4 is one of the prerequisites for implementing successful interaction and solving problems in a team. All this can only be achieved through mutual respect (... *Mutual respect is needed. If there is the understanding that there is nothing terrible to make a mistake here ...)* S3C2, (... *no one judges you for making a mistake here, everyone says that everything will be fine ...)* S4C1. Mutual respect and learning without fear of making mistakes are prerequisites for deep, interactive, and collaborative learning.

Student – content interaction

Problem tasks are an incentive to search for diverse information

Research data revealed that student-content interaction is very diverse. When solving problems, students use various sources of information (... *Read some examples ...)* S1C1, (... *you can google it... however, there are many answers on the Internet ...)* S4C1, (... *first of all I think about what the topic could be in accordance to what we have already covered and what might be related to that problem ...)* S1C1, (... *I'm looking in old notebooks ...)* S2C4, (... *I have a physics problem book ...)* S1C4. Problem-based tasks not only direct students to different sources of information, but resource management becomes one of the priorities. Students understand that they cannot limit themselves to the information found in only one information source, so before presenting their reflections, they check the information found (... *if the information does not match, then you rely on several sources and see how you can get the correct one from them ...)* S3C2, (... *it is important to check the information, because if, for example, you say something wrong, then you can steer the discussion in the wrong direction ...)* S1C1.

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The lack of instruction encourages students to think

Observational data and analysis of videos revealed that the students who participated in the study have only superficial abilities to explore and experiment, in most cases students are waiting for instructions, instructions or a description of the experiment on how to perform it (... Do we use all the tools here? ...) S3C1, (... let's do it together teacher? ...) S1C1. Students find it difficult to find analogues of the observed phenomena and model them using simple tools, but these activities undoubtedly create many opportunities for students to make mistakes, look for new solutions, and re-analyze the presented material. All this only encourages students to get to know the observed phenomena better.

Discussion

There is no doubt that interaction and collaboration are one of the most effective forms of education, which is important for developing essential 21st century skills (Andreasen & Nielsen, 2013; Fung, 2017; Herayanti et. al. 2019, Timonen & Ruokamo, 2021). However, teaching in the digital space remains a problem, which is often criticized for the social isolation of students and the technical problems that arise (Kolbaek, 2018). It could be agreed that social isolation of students really exists, especially when a lecture – "talking head" is chosen for synchronous teaching, there is a real threat of monotony as a one-way of disseminating information to students (Khan et al., 2021). However, our research shows that the social isolation of students can be avoided by choosing tools that promote collaboration, such as the application of the CPS construct using the 3C3R model, because the combination of the CPS construct and the 3C3R model creates unique opportunities to promote student interaction, involve them in active and interactive learning. the process.

When talking about interactive teaching methods in virtual environments, researchers often give examples of interactive videos, various quizzes that can be part of live sessions, and teachers provide feedback or initiate discussion during each interaction (Khan et al., 2021) The idea is great if the teacher takes the role of leader and moderates the discussion. However, let's look at it from the other side, if we want the student to be in the center, and we want to bring learning in the virtual space as close as possible to F2F teaching in the classroom, shouldn't we think about strategies that would give students even more opportunities to raise new ideas, think critically and creatively, discuss, plan tests, raise hypotheses, perform "live" science experiments using tools available at home, discover and create new knowledge and apply it in practice? To implement this during synchronous teaching, as our research revealed, is it enough to use the "Six slides principle for synchronous teaching" principle?

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We fully understand the limitations of our study. Therefore, it can be agreed that there is no model suitable for everyone and there cannot be because of different students, different involvement, different cultures, but it is also obvious that the principles, models, and constructs really exist. So, the goal is to find connections and integration between them and present the result to teachers for use in practice. Therefore, it is worth looking for as many models and constructs as possible, which would allow each education in different countries to choose the model that is relevant and important for the students.

Conclusions

Impactful learning in the digital space for active communication and collaboration is one of the critical issues that educators are faced with today. Our study revealed that the harmony of the CPS construct and the 3C3R model is a prerequisite for successful implementation of synchronous teaching (creating tasks, presenting them, organizing activities, etc.) in virtual environments.

We conclude that creating tasks and organizing synchronous teaching based on the CPS construct and applying the 3C3R problem solving model creates strong connections between teacher – content, teacher – student, student – student and student – content interactions. Presentation of problematic tasks during synchronous training is an incentive to search for various information, select and critically evaluate it. On the other hand, arising cognitive conflicts when faced with problems encourage students to think, delve into problem solving, cooperate and be part of a team.

In addition, the application of the "Six slide principle for synchronous learning" based on the CPS construct and the 3C3R model revealed that solving problem situations related to students' lives, exploring in real time, using simple tools at home, trusting each other, not being afraid to make mistakes and being a team member influence interaction and cooperation for successful learning.

The findings of this study may be useful for science teachers to enhance distance learning in crisis and other extreme situations. It can also be an incentive to change the way we think about the limitations of distance learning.

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Introduction of Educational Robotics at Secondary School Level in the Latvian Education Curriculum

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ABSTRACT

The relevance of the present research is justified by the wide range of educational robotics applications and the rapid development of educational technologies in general. Technologies are produced faster than it is possible to develop methodical teaching materials or curricula, especially in the Latvian language. Educational robotics develops various skills and knowledge, such as algorithmic thinking, problem-solving, logical thinking, etc. However, despite the clear achievements in technology education, there are a number of related problems. These include the lack of teachers, the qualifications of teachers, the lack of funding, and the insufficient provision of teaching materials in line with the new approach in the Latvian education curriculum. The study aimed to develop, test, and improve instructional materials for the implementation of the curriculum for the use of digital technology in elementary schools, as well as to create a methodology for evaluating learning achievements in ICT lessons on the topic "What is programming and how to program in a visual environment" and promoting the development of algorithmic thinking (learning with the educational robot Photon). The study uses mixed research methods. The first part was the analysis of the literature on educational robotics and computational thinking. In the empirical part of the action research, both quantitative and qualitative research methods were used. The results obtained are important for a wider and more meaningful introduction of educational robotics in Latvian schools.

Keywords: computational thinking, educational robotics, instructional materials, Photon, educational robot

Introduction

Robotics, science, and techno-scientific practices in general have become increasingly common in individual and industrial contexts. In both social contexts,

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we see how artificial intelligence (AI) is integrated into various processes, such as security recognition or disease detection and prevention in public health (Salas-Pilco, 2020). Integrating technology, including educational robotics, into the learning process is essential. It is important to implement the technology-enhanced learning process meaningfully, responsibly, and in such a way that technology is a tool to achieve specific goals. Technologies in education are associated with both the technical and organizational support of the educational process, which includes learning management systems, learning platforms, and the management systems of educational institutions (Daniela, 2021), and with learning means, such as educational robotics (devices of various complexity, structure, and functionality), which can be used in the learning process for learning specific achievable results. There are various obstacles to the implementation of educational robotics in practice. One of the main obstacles is the lack of effective instructional materials for the use of educational robotics in classrooms, as well as well-defined curricula and learning materials. These obstacles have created a lack of experienced and professional educators in the productive use of educational robotics (Yang et al., 2020).

Educational robotics is now being widely introduced in learning in schools around the world (at various education levels), including in the general education curriculum in Latvia. However, the amount of instructional materials available in Latvian is very limited. This is a significant obstacle to the introduction of robotics in the learning process. Teaching robotics can be a big challenge for many teachers because, for example, translating materials from another language or creating one's own takes a lot of effort. Another problem is the lack of educators who can teach robotics. Sometimes, educational robots are available at schools, but no one is ready to teach with them.

Currently, there are significant differences in the definitions and implementation processes of educational robotics in educational processes. There are also sometimes noticeably different opinions about the advantages and disadvantages of educational robotics and how to learn it better at different age stages. As such, it is important to use uniform terms, criteria, and guidelines when creating instructional materials for robotics.

Concept of robotics and robot, their development and importance

The field of robotics is a combination of science, technology, and engineering. The main goal of robotics is to produce intelligent machines (Alici, 2018). On the one hand, robotics could be considered a recent trend, and it is now possible to robotize almost everything. From robots that weld parts on car manufacturing lines to robots that interact with people in the service industry (Staples, 2018), we encounter various robots in our daily life, such as chatbots on the web, self-service checkouts, robot hoovers and lawnmowers in

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households, etc. Robotic technology is thus emerging as tools with particular purposes that will allow us to improve the quality of our lives in many aspects, whether caring for our loved ones or making our businesses more productive (Hawes, 2021).

Robots can be classified in many different ways. First of all, it is important to point out that robots can be divided into physical robots and software robots. This research focuses on instructional materials in educational robotics, and the materials developed are for working with the physical robot known as Photon. Despite all the advantages that robotics can bring to education, there is still a lack of a clear definition of the purpose of introducing robots into education (Scaradozzi et al., 2019). Although it is difficult to come to a single definition due to the rapid and dynamic development of the robotics industry and the development of the field of technology more generally, it is possible to classify robots according to their functionality, characteristics, and purpose of operation.

Educational robotics

The beginnings of educational robotics can be traced back to Papert's invention of the LOGO programming language (Papert, 1980), which was suitable for encouraging children's development of their technology and programming skills. Papert's career spanned a trio of influential movements: child development, artificial intelligence, and educational technology. Based on his insights into children's thinking and learning, Papert recognized that computers can be used not only to provide information and instructions but also to allow children to experiment, explore, and express themselves (Resnick & Robinson, 2017).

Robotics in education (hereinafter, RI) covers various applications of robots in the world of teaching and learning, such as replacing the teacher with a robotic device at some stage of learning (reading texts, etc.) or using robots as a support device (communication, motivating students, etc.). On the other hand, educational robotics (hereinafter, ER) is a field that aims to improve people's learning experience, where two aspects (pedagogical and technological) are essential to introduce, improve, and choose appropriate activities, tools (guidelines, templates, etc.), and technologies in which robots play an active role, each activity is pedagogically justified, and the most appropriate methods are chosen (Angel-Fernandez & Vincze, 2018). In short, ER teaches the design, analysis, applicability, and operation of robots, while robotics is used to motivate the learning and acquisition of programming, artificial intelligence, and engineering skills.

Regardless of the classification of robots used and how ER is integrated into the learning process, ER for students aims to achieve specific learning outcomes:

- To improve problem-solving skills, making it easier to understand complex concepts, research, and make decisions.

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- To increase self-efficacy: The natural controllability of the robot encourages experimentation, discovery, and rejection, thus increasing the student's self-confidence, as the student feels in control of the machine. It also strengthens students' critical thinking.
- To improve algorithmic thinking: Students learn algorithmic thinking to break down a large problem into smaller ones and then solve it, thus learning to focus on important information and reject irrelevant details.
- To increase creativity by learning with knowledge that conveys play in a more playful form. Learning turns into a fun activity and becomes more attractive and interesting for the student.
- To increase motivation, as ER allows students to engage in a specific activity and stick to it (Evripidou et al., 2020).

There are two basic types of educational robots based on Papert's ideas: *Build Bots*, which students must assemble before use, and *User Bots*, which students can take out of the packaging and use immediately (Catlin et al., 2019). Researchers and authors have described various benefits to students using ER with both *Build Bots* and *User Bots* in the learning process. The three most important are the development of computational thinking, problem-solving skills, and creativity. Researchers who are working in the field of educational robotics explain that *black box robots* (or *User Bots)* are ready-made devices that students can work with, but since there is no customizing, joining of parts, or creating a design, the student does not know what is inside the robot and does not develop an understanding of its functioning.

The situation in the field of STEM education in Latvia as a whole can be assessed as quite good and constantly improving. However, one of the biggest problems is related to the availability of instructional materials in Latvian and the lack of teachers in the field of robotics. Therefore, during this research, instructional materials were developed for working with the Photon educational robot.

Photon is a learning tool of the latest generation and can be used both at educational institutions and at home, allowing children to get to know the world of modern technology through their own experiences and experiments. According to the taxonomy described above, the Photon robot is ready-made (*black box, User Bots*) and does not qualify as a toy (Photon Robot for Education, 2021) because it has the characteristics of an educational robot, such as flexibility, digitization, repeatability, humanization, and natural interactivity (Pei & Nie, 2018). With the help of the Photon robot, children can develop their algorithmic thinking, creativity, and logical thinking. In the same way, working with a robot can develop their ability to search for solutions to problems in different ways and promote the acquisition of both programming skills and knowledge of the English language.

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By applying appropriate methods in a specific situation, the impact of the robot on the development of children's skills could be divided into four main categories: cognitive, conceptual, language, and social (cooperation) skills (Toh et al., 2016). It is important not to treat ER as the "main" focus of learning where students learn how to play with robots; instead, it should be integrated into a holistic pedagogical strategy to benefit students' learning and development (Tang et al., 2020) to support the formation of knowledge of programming, computational thinking, and creativity.

Computational thinking

The beginnings of computational thinking in the context of technology can be traced back to the previously mentioned Papert in 1960 when he published his concept and basic principles of computational thinking. He also created and introduced the LOGO programming language in 1967 (Resnick et al., 1988) and coined the term "computational thinking" in *Mindstorms: Children, Computers and Powerful Ideas* (Papert, 1980). The educational team founded by Papert at the Massachusetts Institute of Technology has since developed and researched methods for developing algorithmic thinking in students. According to Papert, there are six essential principles of computational thinking:

- an understanding of human-computer interaction;
- the ability to create algorithms to solve problems;
- abstraction and the ability to find and use information;
- problem analysis: possible solutions and anticipation of other problems;
- communication: one must be able to explain problems and provide possible solutions;
- teamwork: one must actively work with others to solve problems (Papert, 1996).

The principles of computational thinking and the development of related skills are closely related to everyday challenges even today. As such, computational thinking is and will be urgent both in the learning process and throughout life. When considering the definition of computational thinking, it is important to mention that, as is the tendency in the field of technology, there is no single definition for this term. However, the following definitions have been put forward by some of the best-known authors on this topic:

- thinking that solves problems in computer science and that makes one think abstractly. Papert primarily connected this concept with the ability to solve problems in computer science (Papert, 1980);
- thinking processes involved in formulating problems and their solutions so that they can be represented in a form that can be implemented by a human or a computer (Wing, 2017;

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- a set of skills that connect basic cognitive skills involved in complex tasks such as abstraction, algorithmic thinking, and data representation (Brennan & Resnick, 2012);
- a way of finding solutions with clearly defined steps).

In scientific articles, conceptualizations of computational thinking are divided into two categories: computational thinking as a code-oriented skill and computational thinking as an interdisciplinary practice. Regardless of whether a code-oriented or interdisciplinary practice is adopted, the computational thinking research community mainly uses the computational thinking construct in the form of programming-based activities (Kite et al., 2021). Relatively few attempts have been made to integrate computational thinking into advanced curriculum programs.

Computational thinking as an interdisciplinary practice can be implemented in any field, but a code-oriented practice can be specifically applied in computer classes because these provide an environment where everyone has access to a computer and a teacher who understands programming. Computational thinking in computer classes is not only related to programming, however. Elementary school students start with logical games in the 1st grade, learn the visual programming environment in the classroom in the 4th-6th grade, and then continue with a text-based programming environment in the 7th-9th grade.

During the last 20 years, methodologies and techniques have been developed that aim to support the development of computational thinking. It was essential to understand how to combine computer capabilities with human capabilities to create the best solution. A key takeaway from these findings is that supporting computational thinking is much more than just programming accessibility (Repenning et al., 2020).

Methodology

For the purposes of this research, 13 instructional materials were developed on how to work with Photon with 4th-5th grade students. The materials were developed in a sequential mode, meaning that each material was developed before a particular class, and the next one was developed based on the results from previous classes. Knowledge development was evaluated using formative assessment tests that followed four levels of knowledge based on the SCML evaluation system (Started to learn: 0–24%; Continues to learn: 25–49%; Mastered: 50–74%; Learned in-depth: 75–100%) to determine how these materials supported the development of computational thinking. At the end of each lesson, students performed a self-test by answering open-ended questions in the Quizziz tool, which started with simple questions and increased in difficulty (see Table 1). Their answers were evaluated on a scale from 0–4, where 0 = no answer given, 1 = 0–24%, 2 = 25–49%, 3 = 50–74%, and 4 = 75–100%.

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Table 1. Learning outcome evaluation questions

Outcome to be achieved	Questions
To materialize the idea, you need to understand what actions have to be done.	1. What is a robot? 2. What actions does a robot help us do in our daily lives? 3. What do you understand by "robotics in education"?
Both computers and humans can perform algorithmic operations. Name the differences and commonalities between humans and computers in the action performed by the human.	1. What is an algorithm? 2. Who can perform/execute algorithmic operations? 3. Write a short, simple algorithm
For each result, the achievement can be described and broken down into a number of smaller and simpler actions. Required actions can be written down in different ways.	1. Who can perform/execute algorithmic operations? 2. What commands/actions does the Photon robot perform (write at least 3)? 3. What types of algorithm notation can you write down?
Describe the algorithm of your idea in words or diagrams. Verbally (by making a list) and schematically (by schematic drawing in free form), describe linear and cyclic algorithms in everyday situations.	1. What are the different types of algorithms? 2. How do you rate your work today – write how it went and what was most interesting. Fill in the self-assessment. 3. What sensors does the Photon robot have, and why are they necessary?
The correctness of the algorithm can be checked by executing the sequential steps specified.	1. How can you work better in Scratch with a spirit or a robot? 2. How do you problem-solve on a daily basis? Describe the steps 3. How can you check the correctness of an algorithm?
The simple actions that are possible are determined by the environment in which the actions are performed (programming or physical). The computer executes the commands given to it verbatim, so the accuracy of the algorithm in the input is very important.	1. Enter two words that fit into the paragraph in the space provided: "The simple actions that are possible are determined by the environment in which the actions are performed – ... or ..." 2. Draw a short linear algorithm. 3. Draw a short branching algorithm. 4. Draw a short cyclic algorithm.
Create a project in a visual programming environment that executes a written or schematically defined algorithm. Create a description of the solution and record the sequence of steps.	1. List two ways how an algorithm can be defined. 2. Write down why it is important to analyze and describe an operational algorithm. 3. Describe the steps to create a qualitative project in the visual programming environment Scratch.

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Table 1. Continued

Outcome to be achieved	Questions
The design solution is targeted and implemented according to a plan. The design program is tested for story representation and possible improvements are identified.	1. What are the features of Scratch's visual programming environment? 2. Write down three types of algorithms. 3. Describe the steps to create a quality project in Scratch with the Photon robot.
Design and visualize an animated story with several characters who perform various simple or cyclical actions to convey the message.	1. Write down what you did best. 2. Write down which part of the test you liked best. 3. Write down what didn't go well and what you would like to do next time to improve. 4. Write down which part of the test you disliked the most or which seemed redundant. 5. How many marks would you give yourself if you were to assess your work according to the criteria?
In a programming environment, plan and visualize a story to be represented on a carpet by a Photon robot that performs various simple or cyclical actions to convey the message of the story.	1. Write down what worked best for you. 2. Write which part of the test you liked best. 3. Write down what didn't go well and what you would like to do next time to improve. 4. Write down which part of the test you disliked the most or which seemed redundant. 5. How many marks would you give yourself if you were to assess your work according to the criteria?
Demonstrate visual programming stories developed in a programming environment, evaluates classmates' performance, and analyze the results.	1. Write down your thoughts on whether you prefer working on Scratch with or without the Photon robot. Why? 2. Was there anything in your classmates' programs you didn't know how to make? Can you describe what it was? 3. Compared to other topics in computer lessons, was this topic different? Did you like it better or not? Why? 4. What did you learn about in this topic?

At the end of the topic, a summative assessment was carried out, consisting of three parts (Scratch, Scratch + Photon, test). The results of 28 students were analyzed in this research; however, this paper only analyzes the final evaluation results.

The materials developed were validated to see whether implementing the developed learning materials improved problem-solving skills, increased self-efficacy, and developed algorithmic thinking, creativity, and motivation.

All procedures performed while involving human participants were conducted in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

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Results

Students' answers to the formative assessment tests were assessed using the SCML principle. Observations show that some pupils did not go into what the question asked or submitted incomplete answers, resulting in a score of 0. The results also depended on whether the question was easy to assess. For instance, naming the types of algorithms has specific correct answers, but answering what a robot is is not so easy to answer, resulting in very different answers.

When assessing the progress of the students, it is evident that the students who answered more accurately at the very beginning ended up with significantly higher marks on the test and vice versa – if they gave no answer or an inaccurate one, their final mark was not very high either. This conclusion is based on the students' scores. After analyzing the data, it can be concluded that almost half (43%) of the respondents have mastered the topic and 25% learned it in-depth for a total of 68%. This is by far the largest part of the respondents. Of the remainder, 25% were assessed at the level of "Continues to learn," while only 7% were assessed as "Started to learn."

The reasons for the low performance indicators could be different, for example, frequent absence from school or the students' light-hearted attitude, e.g., doing everything quickly rather than with better quality. This might have resulted in them not answering the questions at all or answering something completely different from what was asked, thus causing them to get the lowest number of points.

It can also be concluded from the student survey that of robots, algorithms, and the visual programming environment, students knew the most about robots before learning the topic. Similar results also appeared after learning the topic. The respondents knew less about algorithmic thinking and the visual programming environment before learning the topic, but after learning the topic, they knew what an algorithm is.

The visual programming environment performed worst, which was perhaps because it was not talked about as much. For instance, the students knew that the environment they were working in (Scratch) was a visual programming environment, but most did not perceive it. Only a few respondents had previously worked in the Scratch environment or with robots.

This questionnaire proved to be not only a unique and productive experience but also resulted in skills and knowledge being gained, as evidenced in the practical tasks at the end of the survey. The results can be seen in Table 2.

Table 2. Students' results in the final test

Scratch	81.9%
Scratch + Photon	82.3%
Tests	77.9%
AVG in class	80.5%

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Analyzing the students' results after completing the tasks shows that they did the best with the Scratch + Photon part and the worst with the theory test. Overall, the class' grades ranged from 3 to 9, and the average grade was 80.5%, which is very good. The results also vary when comparing the students' individual results, and students who got a failure score did not complete two parts (Photon and test).

Conclusions

Activities with Photon robots develop creative and logical thinking, other skills in a variety of creative ways, and programming skills. When this is combined with the visual programming environment Scratch, discussions, theories, and, above all, practical tasks, pupils are encouraged to develop their algorithmic thinking.

When creating instructional materials, first of all, the goal for ER's implementation should be set in the learning process in computer classes. Second, the learning content should be clearly defined and have achievable results. Next, teaching methods and pedagogical conditions for achieving the goal and learning outcomes should be determined. Then the structure of the learning module, the lesson, should be divided by subtopics with clear indications of exactly which stages ER is included in during the learning process.

The development of teaching materials using an action research design was a very successful practice, enabling the researchers to plan the overall course based on the lessons' results, observations, and conclusions.

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Promoting Ocean Literacy and Combating Chemical Pollution via Marine Education in Taiwan

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ABSTRACT

In the rapidly industrializing world of the 21st century, the many negative environmental impacts of modern-day human practices are becoming substantially more evident. One such problem not brought into considerable focus is chemical pollution in the oceans. As Taiwan is an island that relies heavily on the surrounding ocean for many economic practices, the harms and preventive measures of ocean chemical pollution must be discussed forthwith. This paper aims to conduct an analysis on the current scientific literature published on the topic of ocean chemical pollution and its various impacts specifically on Taiwan's oceans but also aims to conduct a study on Taiwanese university students to investigate the role the current education system plays in establishing the basic understanding of the risks of ocean chemical pollution. This study was organized by surveying 62 university students from the Tainan National University of the Arts and the National Taipei University of Technology. Results showed that 59.7% of students reported they had never learned about ocean chemical pollution in school before, 17.7% of students reported they were not sure, and only 22.6% of students reported that they did learn about ocean chemical pollution in school. This statistically correlates to how only 25.8% of students answered chemical pollution as the most serious problem Taiwan's oceans are facing. A fundamental understanding of ocean chemical pollution in the upcoming generation of young workers, who ultimately will take part in future governmental decision-making, is necessary in that it leads to:

1) an overall increased public support when the government or other private organizations take charge to implement solutions
2) an ability to develop lifestyles that reduce the risk of man-made ocean chemical pollution
3) a willingness to contribute to preventive measures.

Keywords: education system, ocean chemical pollution, ocean literacy, Taiwan, university students

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Introduction

Taiwan is an island where the surrounding oceans have significant economic, political, and cultural value. The oceans play a large biological role in that it helps sustain marine biodiversity, acts as a carbon sink, produces about 50~80% of the oxygen in the Earth's atmosphere, maintains ecosystem resilience, engages in matter and energy cycles such as water, nutrients, and waste cycling, and partakes in climate regulation (National Oceanic and Atmospheric Administration [NOAA], 2022). This paper plans to focus on the negative impacts of marine pollution specifically in Taiwan to better understand the immediate effects ocean chemical pollution can have on the local marine ecosystems and what the response from the public would be. Analyzing the problem on a small-scale first would be beneficial in that it provides a more specific area of study with less overall confounding variables to throw off the end results. This is why this paper will be specifically focusing on Taiwan's oceans to analyze the problem on a local level before applying the knowledge and methodology to an international scale.

Ocean chemical pollution is the dumpage of harmful contaminants into the oceans, commonly originating from man-made sources such as pesticides, herbicides, fertilizers, detergents, oils, industrial chemicals and waste, metals, and sewage (Howard, 2019). Even though ocean chemical pollution poses a great danger to the marine environment, it has long been ignored compared to the other types of pollution in the oceans. Media outlets and current recovery projects only aim to lessen the harms of plastic pollution rather than trying to combat lesser-known problems such as ocean chemical pollution. ENGOs and governmental agencies such as Taiwan's Environmental Protection Administration (EPA) have collaborated to work towards the shared goal of plastic-free oceans by issuing a 15-year ban on plastic and enacting a 10-year Action Plan which would notably advance the limitation and clean-up of plastic waste from the environment (Walther et al., 2021). While these efforts are good indications of sustainable decision-making, this does not change the dire fact that chemical waste in the oceans is still going largely unnoticed and will continue to harm the marine ecosystem's health, human health, and economic strength if overlooked.

Little do people know that plastic pollution is in fact largely linked with chemical pollution, being that plastic pollution plays a key role in the planetary boundary corresponding to chemical pollutants and waste via the discarding of microplastics and other industrial chemicals made during plastic production such as cadmium, phthalates, and lead (Villarrubia-Gomez et al., 2018). Countering both problems concurrently would be beneficial in that effectively resolving two interrelated problems will minimize the chances of one reactivating the other, therefore efforts to combat both must be taken rather than only focusing on plastic pollution. This paper sees that chemical pollution is the most serious problem Taiwan's oceans are facing as of now predominantly because it is being

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widely ignored on both the public and governmental level even though it poses the same level of threat as issues such as plastic pollution. In this regard, the seriousness of a problem should be defined with respect to the number of preventive measures taken to combat the problem in the status quo, not only the degree of harm the problem poses.

Problems that do not receive much public attention or governmental involvement tend to root from the lack of prior knowledge or education regarding the basic causes and possible preventive measures concerning the problem. Comparing this study to prior ones conducted by others revealed the proposed need for the increased integration of marine pollution education into school curriculums and expanded public support and inclination to partake in pollution recovery efforts. This paper shows that public support is something people will be willing to give if they are educated about the many harms and potential life risks of the various types of marine pollution from a young age. This tendency to be willing to support recovery efforts will be based on the innate human need to satisfy their protection and well-being by enhancing the health of their environment after having learned about the risks. A similar study done by Liu et al. (2019) examined the educational role of marine pollution prevention by surveying ninth-grade students from a harbor city in southern Taiwan and having them complete a drawing activity and answer several survey questions. After analyzing the students' responses, it appeared that most of the students' mental models of marine pollution were disconnected and lacked the human component of the problem (Liu et al., 2019). Another study done in Taiwan by Tsai & Chang (2018) developed a Chinese scale for measuring high school students' ocean literacy to allow students to reflect upon the reality of marine pollution issues. The personal understanding and mental models people have of problems affect how they perceive the reality of the issue and how willing they are to make efforts to prevent or lessen the harm.

The majority of prior studies discuss the many environmental threats of ocean chemical pollution however don't discuss the importance of the education curriculum in teaching the growing populace about those threats and cease to analyze the problem from its root cause. Even if a few studies do mention the educational aspect of the problem, data has only been gathered from high school students or younger while this paper conducts a study on university students who have already been through the entire school curriculum and have had the chance to be exposed to the reality of ocean chemical pollution and other types of marine pollution via the internet or other external sources. Therefore, gathering data from university students presents a clearer overall picture of the educational environment current students are exposed to, both inside and outside school, and how well it prepares them to better understand local ocean chemical pollution and other marine pollution issues.

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Literature Analysis

Ocean chemical pollution harms the marine environment via various different sources and routes. This paper aims to categorize the distinct types of ocean chemical pollution sources and analyze each type separately to better comprehend the whole picture. This paper will prove the dire situation of ocean chemical pollution in Taiwan by analyzing different works and information concerning the situation. For the benefit of establishing a clear analysis, this paper has categorized ocean chemical pollution sources into 4 different components: agricultural, industrial, urban, and maritime transport.

Agricultural Component

The agricultural component of ocean chemical pollution sources includes chemicals commonly found in pesticides, herbicides, fertilizers, fungicides, soil fumigants, harvest aids, etc. Taiwan is a large user of chemical pesticides and other such agricultural chemicals, where the total consumption of agricultural pesticides in Taiwan from the year 2019 to 2020 amounted to about 4.5 billion NTD (Wong, 2021). Chemically consisting of nitrates, abamectin, hydramethylnon, cyfluthrin, bifenthrin, and other such harmful toxins (Srivastava et al., 2014), these chemicals often end up in the ocean as a result of agricultural runoffs and soil leaching. Agricultural runoffs are commonplace if nearby agricultural lands are exposed to intensive irrigation practices and heavy tropical rains, but an extensive reliance on toxic farm chemicals pollutes the water which end up in nearby bodies of water via the runoff. Once these toxins end up in the marine ecosystem, they simply remain trapped in the bionetwork due to bioaccumulation and biomagnification, where the toxic chemicals either gradually accumulate in organisms' fat tissue content or magnify in concentration as one moves up the food chain in the ecosystem. This in turn inhibits certain biological functions of these organisms and threatens the biodiversity of the environment, lessening the overall resilience and resistance an ecosystem has towards external dangers.

The introduction of abamectin into marine environments have resulted in abnormal growth and gill alterations in fish where the epithelial cells of the gill filaments and the secondary lamellae membrane of the gills merge, causing the appearance of aneurysm or bulges in blood vessels which have a high risk of rupturing (Novelli et al., 2016). If the blood vessel is ruptured in the wrong part of the body such as the brain or the heart, there is a risk of death for the organism. Hydramethylnon is also another chemical which gravely harms the fish population if presented in the environment. With an LC50 of 0.16 ppm and 0.10 ppm in rainbow trout and channel catfish respectively, hydramethylnon is highly toxic in fish and often accumulates in the fatty tissue of fish due to its low water solubility, large KOW, and large KOC ratios (Bacey, 2000). Additionally, cyfluthrin is highly toxic to fish species, killing them in LC50s as low as 1 ppb

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and also negatively affecting the reproductive success of aquatic invertebrates such as water fleas and mysid shrimp species (Cox, 1994). Moreover, the rapid influx of nitrates into marine coastal ecosystems can result in eutrophication where the abundance of nitrates prompts algae blooms, a rapid accumulation of algae in the ocean, which consumes most of the dissolved oxygen in the waters. This results in extended dead zones where the marine ecosystem has a very low dissolved oxygen content and cannot sustain life for a prolonged period of time.

Industrial Component

The industrial component of ocean chemical pollution sources includes the chemicals that are used in industrial manufacturing processes or used as active ingredients in commercial product manufacturing. Taiwan has a booming chemical industry, boasting approximately 42 member companies of the Taiwan Petrochemical Association and 80 other major chemical companies as of 2010 (Hu & Chen, 2012). Due to the high production capacity, Taiwan exports 50% of its petrochemical products and 70% of its plastic and synthetic rubber raw materials such as polyethylene and styrene-butadiene rubber, with Taiwan's chemical industries making a total of 135 billion USD (Hu & Chen, 2012). These statistics prove that industrial chemical manufacturing in Taiwan is very prevalent and explains how 19.0 million metric tons of industrial waste were generated in Taiwan in 2016 alone (Tsai, 2019). If Taiwan wants to continue its growth in the global chemical industry, proper preventive measures must be taught and understood to restrict the influx of these harmful industrial chemicals into the marine environment.

Industrial chemical wastewater is not only a consequence of fossil fuel mining, powerplants, and chemical manufacturing companies, but also produced as a result of food, beverage, plastic, and clothing processing industries. Chemicals released via petroleum refineries and petrochemical companies comprise of pollutants such as oil, suspended solids, ammonia, chromium, phenols, sulfides, ethylene, propylene, chlorine, nitrates, phosphoric acid, etc (Moore et al., 2021). Fossil fuel power plants, predominantly coal-powered plants, discharge industrial wastewater with substantial amounts of metals such as mercury, lead, cadmium, chromium, arsenic, and selenium (Micronics Engineered Filtration Group, 2021). These metals and toxins, in turn, harm the marine ecosystem into which these industrial wastewaters are dumped into or enter them through wastewater runoff. It has been reported that trace metals such as cadmium, chromium, and lead have been found in marine copepods in northern Taiwan's coastal areas and indicates the high level of contamination in these waters (Fang et al., 2006). High concentrations of selenium, iron, zinc, copper, manganese, and mercury were found in muscle, lung, kidney, and liver tissues of cetacean species such as *Kogia sima*, *Grampus griseus*, *Lagenodelphis hosei*, *Stenella attenuata*, and more in

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the marine waters of northern and eastern Taiwan (Chen et al., 2020). Not only are Taiwanese marine biodiversity suffering from metals and industrial chemicals contamination, they are also prone to microplastic contamination where 1,097 microplastic particles ranging from 0.25 mm and more than 4 mm, weighing 0.771 grams were identified in only eight 0.0125 m3 samples of Taiwan's northern beaches and coastal marine areas (Kunz et al., 2016). Industrial chemicals, metals, and microplastics pose a great threat to the marine ecosystems of Taiwan's coastal areas and must be dealt with to lessen the chance of endangerment of marine species.

Urban Component

The urban component of ocean chemical pollution sources include urban wastewaters, sewage sludge, domestic chemical detergents, household chemical products, etc. Municipal wastewater is one of Taiwan's largest sources of water pollution, especially in concentrated urban areas lacking proper sewer systems and sanitation protocols. The Environmental White Paper 2007 presented by the Taiwanese Environmental Protection Administration (EPA) analyzed that inadequately treated municipal wastewater have been continuously contaminating local water bodies and coastal areas, additionally stating that sanitary sewer systems have not been properly augmented to sustain growing city populations, rapid urbanization, and expanding commercial activities (Chou, 2013). Furthermore, it was reported on May 1, 2018, that surfers and tourists at Nanwan Beach in southern Taiwan encountered sludge discharge from a local sewage treatment plant in the coastal area (Everington, 2018). Specialists later analyzed that the sewage sludge had already been spread far enough into the ocean and has a high prospect of disrupting the local marine ecosystem and harming the biodiversity. Additionally, in 2020, the Taiwanese domestic consumption of synthetic chemical detergents measured up to approximately 70,000 metric tons and has shown a positive trend with increasing consumption of household chemical detergents throughout the years (US Environmental Protection Agency, 2000). This proves the dire state of urban ocean chemical pollution in Taiwan, with inadequate urban wastewater disposal systems and the overwhelming domestic consumption of chemical products and detergents.

Chemicals often found in sewage discharges and urban sludges include considerable amounts of nitrates, ammonia, phenols, polychlorinated biphenyls (PCBs), phthalates, volatile aromatic compounds (toluene, benzene, xylene), selenium, etc. (US Environmental Protection Agency, 2000). These toxins inhibit chemical senses of fish species and biomagnify throughout marine ecological food chains. Due to the high affinity for lipids and low elimination rate, PCBs tend to bioaccumulate in the fatty tissue of fish and results in irregular levels of thyroid hormones and neurotransmitters due to disruptions of the endocrine system in

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fish (Monosson, 2000). High levels of PCBs also immoderately negatively affects the hypothalamic-pituitary-gonadal-liver (HPGL) axis of fish, a closely regulated feedback loop essential for the supervision of proper reproductive success, which leads to alterations in sex steroid hormones, gonad growth, and embryo yolk production (Monosson, 2000). Ultimately, PCBs are highly toxic to fish and greatly alters the reproductive cycles. Additionally, chemical detergents are proven to harm fish species such as *Ictalurus natalis* by damaging their chemoreceptors revealing erosion of taste buds and impairment of receptor function, affecting ability to feed or swim just after being exposed to only 0.5 ppm of the chemical detergent (Bardach et al., 1965). It was reported that afflicted fish did not recover even after spending 6 weeks in detergent-free waters, demonstrating the long-term negative effects excessive use of chemical detergents can have on the marine ecosystem. Furthermore, the influx of nitrates found in sewage sludges are very likely to result in eutrophication and harmful algae blooms just as discussed earlier in the agricultural component section.

Maritime Transport Component

The maritime transport component of ocean chemical pollution sources involve marine transportation for commerce and global trade via coastal trading vessels, bulk carriers, tankers, container ships, cargo ships, etc. The main link maritime transport has to chemical pollution are the harmful incidents of chemical and oil spills and the degradation they bring to marine ecosystems. This case of ocean chemical pollution is also distinctive to Taiwan due to the previous occurrences of oil spills caused by maritime transport. It was reported in March 2016 that a grounded ship, the T.S. Lines freighter, around Shimen Township in the coastal waters of New Taipei City encountered a breach in the hull which caused flooding in the engine compartment and severe damage to the fuel tank. This resulted in an expansive oil spill, where the local marine ecosystem was greatly threatened due to the fact that the ship was storing 40 tons of diesel fuel, 447 tons of gasoline, and 9 containers of hazardous chemicals (Charlier, 2016).

Additionally, another oil spill took place when the Greek-registered ship, the *Amorgos*, passed by the southern coastal areas of Taiwan and caused a vast oil spill, putting the local marine species in danger due to an accident in the merchant vessel. These occurrences demonstrate the realistic harm oil spills via maritime transport can cause to the environment. Even if people argue that oil spills have a rare occurrence rate, ecologically damaging oil spill accidents have already happened before and especially with heavy maritime traffic where approximately 30,000 tankers travel through Taiwan's coastal waters every year (Chiau, 2005), proper education and development of effective protocols is absolutely necessary to ensure the safety of Taiwan's coastal waters while still allowing for the continuation of economic maritime activities.

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Incorporating the Educational Factor

Ocean literacy is a knowledge set that is essential for people to have in a world where sustainable development is constantly being promoted and studied. Historically, ocean literacy has only been something taught to people who have direct exposure or involvement with the ocean and its many commercial practices. However, as the world is growing ever more interconnected, where the actions of people living away from the oceans still have an impact on the health of the oceans, ocean literacy needs to be more than just informally mentioned at schools. Similar to the European Marine Science Educators Association, there is an inherent need for the formation of an organization dedicated to mapping out ocean literacy principles in order to uniformly incorporate marine education into high school curriculums in Taiwan (Worm et al., 2021). For most students, ocean literacy may seem like an abstract term, therefore, in order to incorporate ocean literacy, the practical and cultural connections between the ocean and students' everyday lives must be made so that students can develop a clearer mental map of the importance of the ocean.

Although over the years, Taiwan has gotten more involved in marine protection methods to participate in the UN's Decade of Ocean Science for Sustainable Development, most of these measures are not implemented directly in education. The Taiwanese education system would benefit from incorporating a measurement tool to determine students' ocean literacy levels and thus make changes to the curriculums accordingly. An example would be the International Ocean Literacy Survey which sets a standard for students, however, this kind of survey has never been implemented within Taiwan, thus marking a need for change (Fauville et al., 2018).

Methodology

To better understand the role, the educational curriculum plays in establishing a basic understanding of ocean chemical pollution and other marine issues in students, a survey was designed and given to Taiwanese university students. Participation in this study was voluntary and anonymous. This was a self-administered web-enabled questionnaire, which was estimated to take approximately 5 minutes to complete the survey.

Even if a few studies do mention the educational aspect of the problem, data has only been gathered from high school students or younger while this paper conducts a study on university students who have already been through the entire school curriculum and have had the chance to be exposed to the reality of ocean chemical pollution and other types of marine pollution via the internet or other external sources. Therefore, gathering data from university students presents a clearer overall picture of the educational environment current students are exposed

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to, both inside and outside school, and how well it prepares them to better understand local ocean chemical pollution and other marine pollution issues.

Survey Development

The questionnaire was created and administered in both English and Chinese to aid the Taiwanese university students and avoid confounding variables. The survey was designed to gather information about the students' opinions on how well the school curriculum developed their ocean literacy and how confident they are in their personal understanding and knowledge about marine pollution issues in Taiwan.

- Questions 1~3 were designed to ask for basic personal information and demographic data. Information such as age, gender, and highest level of education were asked for.
- Questions 4~5 were designed to directly and explicitly ask what the students' views were on how well the school curriculum prepared their ocean literacy. They were asked whether they had learned about ocean chemical pollution in school before and what they thought the most serious marine pollution problem was after being exposed to the school curriculum and other external sources such as the internet.
- Questions 6~13 were designed to indirectly and implicitly ask what their knowledge about ocean chemical pollution and marine issues were. These questions helped gather objective data on how well the school curriculum developed students' ocean literacy. They were asked questions about certain facts or what they thought about a certain piece of information or statement regarding marine issues.

The majority of the responses were recorded using a 5-point Likert scale, where 1 represented strongly disagree and 5 represented strongly agree. A few of the questions were multiple-choice or free-answer style questions.

Survey Administration

The questionnaire was presented through an online Google forms survey platform. The survey was given specifically to Taiwanese university students, unlike the previous studies that were discussed in the introduction. University students were chosen exclusively due to how their responses would present an overall impression of how well the entire school curriculum and external educational environment prepares students' ocean literacy and gives them the chance to understand marine issues in their country. University students from the Tainan National University of the Arts and National Taipei University of Technology were chosen specifically since the combination of these universities' student populations would have a broader range of professional backgrounds and education specialization areas to avoid results from being deceiving or biased.

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Additionally, since the universities are located in different regions of Taiwan, the school curriculums and educational environments of different counties could be taken into consideration in this study. The online questionnaire was distributed to students at the Tainan National University of the Arts and was published on the student website of the National Taipei University of Technology to have students voluntarily fill out and submit responses via the Google forms link. The students were given a period of 6 days to fill out the survey, starting on June 25, 2021, and ending on June 30, 2021.

To take into consideration ethical approval for this study, as an independent research, we received an IRB approval from the Tainan National University of the Arts. Additionally, before administering the survey, it was made clear to the participants that their responses to the survey were for the purpose of this study and that any personal information remained confidential and the survey responses were anonymous. If the participants did not want to take part in the study, then they were free to choose not to participate. Those who agreed and consented to using their answers as data were free to proceed with the survey, thus being voluntary participation after informed consent.

Data Analysis & Discussion

Demographic Data

Out of the university students that were surveyed, 61.3% (38 people) of participants were female, 37.1% (23 people) were male, and 1.6% (1 person) preferred not to say.
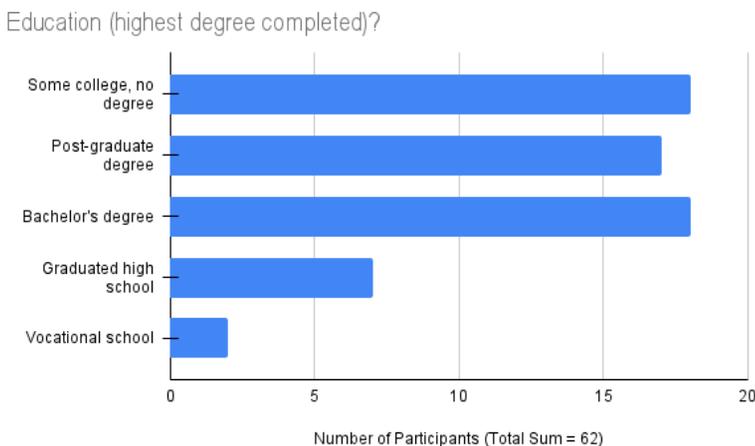

Figure 1. Demographic data on the educational status of the participants

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The data on age range was that 62.9% (39 people) of participants were between the ages of 18 and 24, 30.6% (19 people) were between the ages of 25 and 34, 3.2% (2 people) were between the ages of 35 and 44, and 3.2% (2 people) were between the ages of 45 and 54. The data on the highest degree of education completed is shown in Figure 1.

As Figure 1 shows, 11.3% (7 people) of participants had graduated high school, 3.2% (2 people) had completed vocational school, 29% (18 people) had completed some college but had not yet obtained a degree, 29% (18 people) had completed a Bachelor's degree, and 27.4% (17 people) had completed a post-graduate degree. Results show a varied student body allowing for a fair variety of views amongst the participants.

Critical Data Points

In providing the analysis of the survey results, there were a few questions that provided the critical data values for this study. The first question being "Did you ever learn about marine chemical pollution in school before?", this question aimed to explicitly examine what the university students' views were on their own education systems and have them question the role their school curriculums and educational environment played in ensuring students with a basic foundation of ocean literacy for the future. The results for this question supported this paper's claim that there is in fact a lack of proper integration of ocean education, regarding ocean chemical pollution and other such marine pollution issues, into the curriculums of local Taiwanese schools. As shown in Figure 2, the 59.7% majority of students (37 people) answered that they have never learned about marine chemical pollution in school before. Only 22.6% of students (14 people) were absolutely certain when answering that they have in fact learned about these kinds of marine issues in school before, with 17.7% of students (11 people) not being sure.

To provide further analysis, the students' age ranges and levels of education were studied to see if it was possible to derive a correlation between these variables. Out of the 37 people who answered that they have never learned about marine pollution in school before, the majority of the responses came from students who are between the ages of 18 to 24 (19 students; 51.4%) and between the ages of 25 to 34 (15 students; 40.5%), while only the extreme minority of responses coming from older age groups (1 student in the age range between 35 to 44 at 2.7% and 2 students in the age range between 45 to 54 at 5.4%). Therefore, the majority of the students who commented on the lack of ocean literacy in their school curriculums were those from younger age groups, meaning those who were exposed to the most current educational curriculums in Taiwan admit that their curriculums did not do a good job of preparing them and educating them on marine pollution issues. Out of the 37 people who answered

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no, when asked for the highest level of education they have been involved in, 14 students responded high school (37.8%), 10 students responded Bachelor's degree (27%), and 13 students responded post-graduate degree (35.1%).

From these specific data points, it can be identified that the responses are divided fairly equally amongst the three levels of education, meaning that the more educated one was didn't really play a significant factor in ensuring whether someone was more educated on marine issues or not. However, looking back at the statistics regarding the ages of people who answered no, the overwhelming majority were those who were from younger age groups, implying that education on all three levels was almost equally bad in ensuring ocean literacy and the trend with age probably meant that students' external learning environments, such as the internet, current news, or the very limited public environmental campaigns, played the biggest factor in the trend of ages observed. In other words, the older the students are, the longer they have been exposed to this external learning environment and thus the more of them that have a better understanding of marine issues. In conclusion, the relative trend of how younger students knew less about these issues could be due to two reasons:

1) the quality of education in this area or the overall integration of marine pollution education into school curriculums decreased or
2) the longer the students are exposed to external factors of education such as the media or already existing public campaigns, which age played a key factor in.
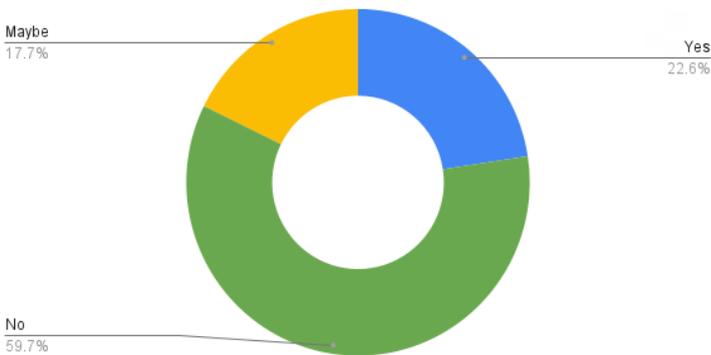

Figure 2. Results on whether students ever learned about marine chemical pollution or other related marine issues in their high school curriculum

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The second question being "What do you think is the most serious problem Taiwan's oceans are facing no?", this question was meant to test the participants' knowledge of marine issues and how their educational environments influenced their opinions on this matter. Out of the 5 main types of marine pollution listed, the 3 that were answered the most were plastic pollution, chemical pollution, and solid waste pollution. As illustrated in Figure 3, the responses from the 63 participants showed that the majority 54.8% (34 people) of students stated plastic pollution as the most serious problem, 11.3% (7 people) stated solid waste pollution, 4.8% (3 people) stated thermal pollution, 3.2% (2 people) chose other, and only 25.8% (16 people) answered chemical pollution as the most serious problem Taiwan's oceans are facing. To put it in other words, only 16 out of 63 people thought that chemical marine pollution, which this paper previously went in depth about its direness and a justification for why it should be considered.

More specifically, out of the 34 people who responded with plastic pollution as the most dire situation in Taiwan, 22 of those participants were those whose high school curriculums didn't include marine pollution education. Consequently, out of that batch, 6 people answered earlier that their high school curriculum included marine pollution education while the remaining 6 participants were unsure. In comparison, out of the 16 people who answered chemical pollution as the most dire marine pollution situation in Taiwan, 9 of those people have never properly learned about marine pollution in school, while 3 people have learned about it and 4 people were unsure. These numbers show inconsistency in ensuring students with the prerequisite knowledge of marine education, demonstrating how the majority of people whose curriculums had no mention of marine issues were more likely to immediately believe that plastic pollution was more dire than chemical pollution, presumably due to the relatively larger media coverage plastic pollution receives in Taiwan. Comparatively, people who chose chemical pollution as the most dire situation didn't display a statistically relevant percentage breakdown of people who learned about marine issues in school versus people who didn't. However, due to the lack of marine pollution education in school curriculums as demonstrated by the statistics shown in Figure 2, only a minority of students realize the real serious nature behind ocean chemical pollution. The majority of students who chose plastic pollution were highly likely to never been educated on the fact on there are many current recovery projects targeting plastic pollution in Taiwan and it is in fact ocean chemical pollution that is not getting enough recognition as a serious marine problem. As proven in the literature analysis, the prolonged harms of ocean chemical pollution will continue if students aren't educated on the distressing reality of ocean chemical pollution and will continue to acknowledge plastic pollution as the most serious problem simply due to the fact that the term is heard much more frequently in media broadcasting stations and news articles. As a part of the marine pollution

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education that needs to be integrated into school curriculums, students must be taught a clearer system of defining the seriousness of an ecological problem, where both the level of environmental harm and the number of current targeted recovery projects and organizational efforts to prevent the harms are taken into consideration to evaluate the urgent nature of a problem.
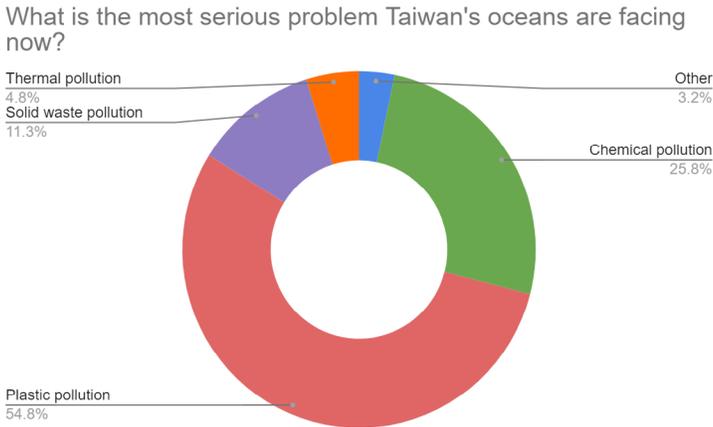
Figure 3. Results on what the students personally thought was the most serious problem that Taiwan's oceans are facing in the status quo

The students were later asked questions about their confidence in Taiwan's marine ecosystem safety and health, Figure 4 shows the results being a variety of answers in this case.
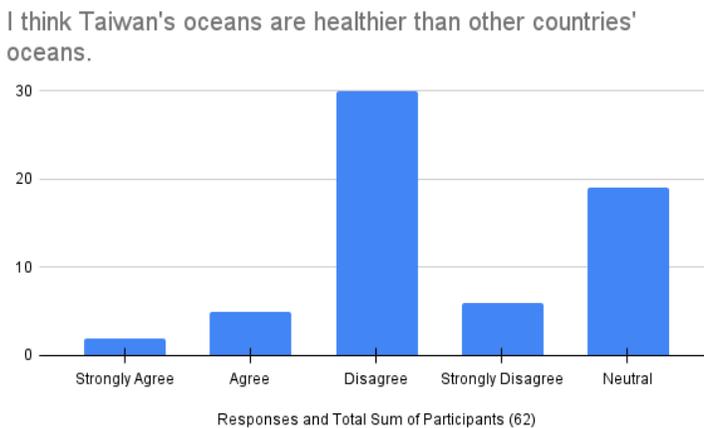
Figure 4. Results on the students' opinions on whether Taiwan's oceans safer and cleaner when compared to other countries' oceans

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In response to the statement "I think Taiwan's oceans are healthier than other countries' oceans: 3.2% (2 people) strongly agreed, 8.1% (5 people) agreed, 30.6% (19 people) remained neutral, 48.4% (30 people) disagreed, and 9.7% (6 people) strongly disagreed. These statistics prove how there is a considerable variation in the students' answers and this in turn will affect the ability for these university students to later collaborate to work towards marine pollution recovery projects and prevention policies. This proves the need for a more effective integration of marine pollution education in school curriculums to enable the growth of a more consistent mindset towards protection of Taiwan's oceans amongst young minds. A clearer, more unified viewpoint established amongst students will aid the effective development of successful preventive measures of marine pollution issues.

The slight majority of students, however, did disagree to the fact that Taiwan's oceans are healthier and safer than other countries'. This piece of data also shows that there is a certain urge in the youth population of Taiwan to take better care of Taiwan's oceans. If they are provided with proper education on these topics and a healthy development of ocean literacy from a young age, these students and future young workers will be more capable of launching legitimate recovery projects and ultimately better practice sustainable decision making via successfully passing and monitoring marine protection policies. Another data point to support this assertion was gathered from the students' responses to the question on whether they believed that ocean chemical pollution would have a direct negative impact on human health and lifestyle.

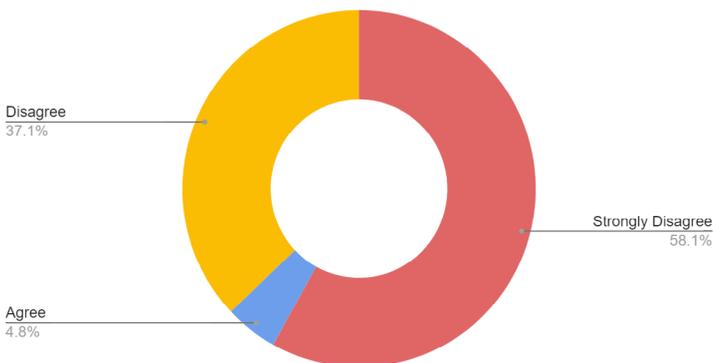I think chemical pollution in the oceans has no effect on the health of humans.

Disagree
37.1%

Strongly Disagree
58.1%

Agree
4.8%

Figure 5. Students' responses to whether they thought ocean chemical pollution affected human health

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Responses had an overwhelming majority of students who disagreed with the statement "I think chemical pollution in the oceans has no effect on the health of humans" with: 58.1% (36 people) who strongly disagreed, 37.1% (23 people) who disagreed, and 4.8% (3 people) who agreed with the statement. These results are shown in Figure 5, demonstrating that there is a general concern for the prevalence of ocean chemical pollution due to the threat it poses to human health. Furthermore, this shows how students do have an urge to help due to the fear brought about by the possible risk it poses to humans, however, proper marine pollution education is necessary for the effective use of the widespread concern in the youth population of Taiwan to better solve these marine issues.

This statistic proves how only a minority of the survey population have had actual marine pollution education in their school curriculums, which when applied to the wider population of university students in Taiwan is very concerning due to the fact that the majority of Taiwanese society's future workers and young minds have not had the proper schooling on the dire topics of ocean chemical pollution and marine pollution issues.

Conclusion

According to the conducted research study, results clearly demonstrate the need for the adequate integration of ocean chemical pollution and other marine issues education into the school curriculum. Even though it was a limited survey, the gathered statistics still prove the claim made in this paper. This paper has conducted an analysis and thorough investigation of ocean chemical pollution both on how certain toxic chemicals affect marine biodiversity and how each case of ocean chemical pollution applies to Taiwan. Through the literature analysis, this paper has proven the seriousness of the problem that ocean chemical pollution is in Taiwan's oceans and have also proposed the best way to lessen the environmental harms. To better solve problems such as ocean chemical pollution that do not get much attention from public or governmental sectors, proper marine education and development of students' ocean literacy must be enforced. The introduction of marine education into school curriculums can be brought upon, for example, by the development of a Taiwan Marine Education Act, which sets proper guidelines for schools to develop their curriculum to allow students to be educated on topics such as ocean chemical pollution and other marine issues. This will allow for more consistent social awareness on the topic of ocean chemical pollution and also the enhancement of a basic understanding of such topics in students.

A basic understanding of ocean chemical pollution and other marine issues are crucial in the next generation of young minds in Taiwan due to the potential for

1) increased public support when the government or other private organizations take charge to implement solutions

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2) development of life styles that reduce the risk of man-made ocean chemical pollution in youth populations

3) the growth of a common willingness to contribute to preventive measures.

In future research, investigations on university students can be done on a larger sample population of students and from a greater variety of universities in Taiwan. These future studies will allow for the gathering of legitimate data to back up the development of marine education in school curriculums. Ocean chemical pollution is a real threat to Taiwan's oceans and educating the youth of Taiwan is the best way to combat the prolonged destruction it has on the marine ecosystems of Taiwan.

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The Impact of Additional Sports Activities on the Development of Students in General Education Schools

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ABSTRACT

Sports can be diverse – dual career, sports for the general public, youth sports, and other levels. However, the level of general education schools is vital, as it is compulsory in the Latvian education system. Thus, for approximately 70% of Latvian children and young people, sports lessons are the only places to do sports. The study's author has analyzed the "Sport everyone in the class" project organized by the Latvian Olympic Committee. The essence of the project is related to additional sports activities that depend on the capabilities of the particular school – both in terms of infrastructure and human resources. A quantitative and qualitative survey method has been performed. Data were obtained from 26 schools participating in the project. Number of respondents – students – n-582. The author analyzed the impact of additional sports activities on students' work ethic, learning achievements, physical fitness, etc. Data were processed using the Windows SPSS program. It is concluded that students improve their ability to concentrate and complete the learning process and their eating habits. In qualitative surveys – interviews with school management, it was found that this type of process is recommended for all educational institutions because the benefits are more than the negative factors.

Keywords: Sport, education, health, kids, societies well-being

Introduction

The importance of sports in society is becoming more and more critical. Overall, health trends at different age stages have a negative trend. The World Health Organization (WHO) points out a significant trend related to the poor physical fitness of young people and the consequences of these processes. Unhealthier children and young people are not a good development vision for the country's general well-being (World health…, 2021). It is possible to develop and improve the country's welfare based on a better understanding of the level

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of sports and general health. Youth, who will better understand the importance of sports, will be able to perform primary activities – study, work, and improve themselves – with better quality.

An increasingly pronounced correlation can be observed with integrating education into sports. Educational institutions of different levels – primary schools, secondary schools, universities – associate their identity with sports, thus combining two vitally essential directions of development – sports and education. Today it is defined as a dual career. However, its manifestations and possible variations can be different. A dual career is a collaborative process of activities in which the athlete develops his athletic and academic competence and promotes psychosocial and psychological development (Stambulova, 2009).

However, a dual career is not the only development direction in the combination of sports and education. The author of the study points out that the conduct of sports lessons in general education schools is vital in ensuring society's well-being.

Theory

The author considers integrating different sports necessary for the overall education system. It is indicated that regular physical activity can avoid signs of anxiety and depression (Eime et al., 2013). The author wants to emphasize two theses. Firstly, in the EU Member States, the average number of hours of sport is 3-4 times a week. This does not correspond to the required volume because, in the context of mainstream schools, it would be possible to provide sports activities every working day or five times a week. Although the importance of sport in society is quite understandable, in Latvia and elsewhere in Europe, the number of sports lessons is not enough. For example, in the 2018/2019 school year, public education institutions (France, Germany, and Greece) held sports lessons three times a week (D'anna et al., 2019). Most Member States organize sports lessons in mainstream schools three times a week as part of sports lessons. This practice is still in Finland and Estonia, while there are sports hours four times a week in Austria. Although the overall trends in the Member States of the European Union focus on integrating relatively high levels of physical activity in education, some countries behave differently. For example, in Swedish secondary schools, sports activities are recommended but not mandatory (Physical activity…, 2018). In the future, it is planned to increase the number to three times, similar to other parts of Europe. WHO has developed analytical information material describing data related to the Sports Guidelines of the Member States of the European Union.

Sports activities can also integrate students with learning problems (Nopembri et al., 2019). Students can feel relatively more unrestricted and more comfortable in sports infrastructure – in the hall, stadium, or elsewhere. This way, the

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inequalities likely to form in the rest of the learning process can be reduced. Using different types of activities – games, games, or other activities- a sports teacher can promote mutual communication between students.

However, in different studies, researchers from sports, medicine, and psychology indicate a more significant number of desired daily sports activities. For example, in Australia (Bateman et al., 2020), the researcher and his team studied how sports can affect the psychological and social aspects of adolescence.

The development of an educational institution depends on several factors. One of the most important is to define the activity and quality of the director of the educational institution. Education researchers have concluded that the competence of an education leader is the second most significant influencing factor concerning students' learning performance. Even more significant is the class teacher's work, which is more frequent and direct contact with students (Geske & Račs, 2019). The strategic role and overall vision of school leaders are of great importance. Other authors have also pointed this out (Stoll & Temperley, 2009).

The study's author emphasizes the need for sports lessons and their content side. Starting from the 2021/2022 school year, the new competence approach was introduced into the Latvian education system. They are learning content based on several guidelines – self-critical thinking, transversal skills, interdisciplinary linkages, and other relevant aspects. The changes also relate to the field of sports, since not only the names of the subject are changed, but also a large part of the curriculum. The official name of the change in educational content is "Competence approach to learning content School 2030" (School 2030, 2020).

By the 2021/2022 school year, the content of sports lessons was much different. Their content was primarily based on the testing and measurement of physical abilities. For example, a test of physical characteristics – tests of speed, strength, or endurance. The students performed runs to time control and performed physical exercises by another. As a result, differences in achievements were visually visible within the framework of sports lessons, contributing to the reluctance to attend sports lessons. In the context of the new competence approach, the evaluation criteria to date are broader and more democratic:

- Progress;
- Attitude;
- Self-esteem;
- Assessment of other class members;
- Ingenuity or creativity;
- The result presented;
- The indicated result in the technical field, etc.

The integration of self-assessment into the evaluation process is of great importance for the evaluation criteria. Self-esteem is essential for further personal development (Prihadi & Chua, 2012).

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By critically evaluating one's development and activities, it is possible to make significant progress in various aspects. From an early age, students should be taught how a meaningful and thoughtful analysis of their actions takes place. Of course, in specific age periods with the involvement of self-critical thinking in the learning process, educators should be cautious. For example, at the stage of adolescence, when schoolchildren have an exacerbated perception (Malm et al., 2003).

Successful inclusion of additional sports students in the daily learning process requires a strong management stance and appropriate action. In the context of education, the concept of "leadership" is translated from English as Leader or Leadership. The term "leader" controls individual human resources of individuals, groups, states, or people of a different size. The leader may have various specific directions—for example, religious deviance (Cambridge Dictionary, 2022). On the other hand, the scientific article focuses on the difference between the concept of "leader" and "leadership." The leader's activity focuses on developing specific people or groups, while the leadership process includes many people (Day et al., 2014).

There are different levels in the field of educational management, so that the responsibilities may be different. There are three levels of managers – first-level, middle-level, and senior managers. The first is responsible for the operational level of management, the second tactical, and the third strategic (Clark, 2009). Each of them has its specialized task at the management level. For example, in the context of education, the middle manager is more often the school director.

In education and other areas, communication abilities are of great importance (Armstrong & McCain, 2021). Through communication, school management can better define the goal and play an essential role in defining the potential benefits of the process in question.

Managerial skills can directly contribute to the quality of an institution in the context of the learning process and work ethic. Above, a manager's necessary skills were listed to successfully direct an educational institution toward achieving specific goals. The aspects mentioned in other literary sources are somewhat different from those already considered above.

Skills:
• Technical;
• Human;
• Conceptual;
• Delegation skills;
• Knowledge of foreign languages (Colemen, 2012).

For the school to include additional sports lessons, it is necessary to carry out organizational activities. For example, in the Latvian education system, the Latvian Olympic Committee's project "Sport everyone in the class" has been

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integrated into the education system for a long time. As part of this, schools receive methodological materials in addition to implementing sports studies. However, the financial aspect remains in the hands of school management. In order to successfully attract the additional financial resources needed, school leaders must be able to justify the purpose and added value of the necessary funding. One option is to include sports in the planning document of a medium or long-term institution. For example, by including a desire to emphasize student health in the development of the strategy, school authorities can clearly define their need for additional funding.

The concept of "strategy" has historically been associated with various military operations. Several definitions are given in the scientific literature. However, they are primarily associated with business development and the basic principles of sustainability. Dr.oec. Janis Caune and Dr.sc.ing. Andrejs Dzedons, in his book "Strategic Management," pointed out that the strategy includes

- all the essential activities of the company,
- causing the direction of the company's activities and the goal of existence,
- pushing the necessary changes that are determined by the operating environment.

It defines how organizations create a competitive advantage and ensure sustainability (Caune & Dzedonis, 2009). A strategy is a plan of senior management to achieve long-term results by the organization's operational goals.

Including additional sports lessons are vital because it facilitates several positive processes, but from a management point of view, it is an essential prerequisite for several variables.

School management must be able to successfully define its goal of integrating sport. The process must be justified in the context of infrastructure and human resources, and, of course, there must be a target audience that can and wants to implement the planned process.

Figure 1. Important factors in the process of integration of sports students (create by author)

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Methodology

The operation of the projection "Sport everyone in the class" was studied. One quantitative survey with students, who participated in this project and one quantitative survey with educators were conducted, bringing the total respondents to n-683: n-582 students; n-75 teachers; n-26 school's directors.

Its mission is to strengthen the ideals of the Olympic Movement and the values of the high achievements of Latvian athletes in society by interesting children and young people to engage in physical activity, improving the health of pupils and their quality of life (Olympic, 2021).

The author used the quantitative method because it has more positive aspects that contribute to the quality of the study: Economy of resources (so-called time and financial); Anonymity; Includes many responses (Geske & Grīnfelds 2006).

Research

Through the mediation of school management, questionnaires were sent to students, teachers, school principals, or their deputies. Questionnaires were sent only to those schools that participated in the project with at least two classes. The obtained data were processed with the Windows SPPS 16.00 program. Pearson correlation was used to find a correlation between two variables. With its help, it is possible to calculate the correlation coefficient obtained based on quantitative data. Pearson correlation is usually used if the variables are measured on an interval or proportional scale.

The most significant respondents were students who participated in the whole class sports project. The study's author wanted to determine the effect of sports lessons every day from the student's point of view.

Table 1. Obtained correlations from students' responses to the statements

		Since doing more sports, I have started to study better	Since I've been doing more sports, it's easier for me to concentrate and study	I have become more athletic
Since doing more sports, I have started to study better	Pearson Correlation	1	,419**	,095*
	Sig. (2-tailed)		,000	,022
	N	582	582	582
Since I've been doing more sports, it's easier for me to concentrate and study	Pearson Correlation	,419**	1	,076
	Sig. (2-tailed)	,000		,066
	N	582	582	582
I have become more athletic	Pearson Correlation	,095*	,076	1
	Sig. (2-tailed)	,022	,066	
	N	582	582	582
I have started to eat healthier	Pearson Correlation	,247**	,290**	,035
	Sig. (2-tailed)	,000	,000	,394
	N	582	582	582

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

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It can be seen that several significant correlations with a high degree of confidence have emerged. The data were obtained by collecting the answers given by all n-582 students-respondents. There is a significant correlation between the statements about the student's opinions regarding the impact of sports on their studies and the fact that it is easier for students to concentrate and learn. The p-value of the corresponding correlation is 0.00, which is very high confidence. On the other hand, the correlation is 0.419, which can be evaluated as relatively high and significant.

The content of both statements indicates a positive trend concerning the sports integration process. For a higher-quality learning process to take place, students need the ability to concentrate and perceive new information. The unifying element of both statements is the sport. Therefore, it can be concluded that it has contributed to the level of concentration abilities, which has also contributed to academic achievements.

The study's author emphasizes another binding correlation that was not predicted before. The fact is related to eating habits, which have been facilitated by daily extra sports hours. Although the need for healthy eating is not explicitly emphasized within the sports lessons (the content of the lessons may differ for each school), the students were pointed to positive changes. The correlation (0.247 and 0.290) between statements about eating habits and the ability to concentrate better or academic achievement is not exceptionally high, but it does indicate a positive trend.

In the project "Sports for everyone in the class," educators who work with children, especially sports teachers, are essential. The author also raised the opinion of pedagogues regarding their views regarding including additional sports lessons in the learning process. The main emphasis of the statements was focused on the same guidelines as for the students.

A significant correlation was obtained between the statements "I believe that additional sports activities positively affect the work ethic of students (for example, concentration, etc.)" and "I believe that additional sports activities positively affect the success of students," a high correlation is observed. The p-value of the resulting correlation is 0.00, which is high confidence. On the other hand, the correlation is 0.682. The obtained data show that the pedagogues have indicated positive and significant trends – sports activities have improved the work ethic. At the same time, there is an improvement in learning achievements.

However, another correlation indicates the opposite trend. The obtained correlation between the statements "I believe that additional sports activities have a positive effect on student success" and "Students who study "Sports for everyone in the class" have better results compared to their peers." The p-value obtained between the two statements has a moderately high confidence of 0.057 and a correlation of 0.221, which cannot be defined as very high.

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Table 2. Obtained correlations from teachers responses to the statements

Correlations				
		Students studying "Sports for the whole class" have better results compared to their peers	I believe that additional sports activities have a positive effect on the success of students	I believe that additional sports activities have a positive effect on the work ethic of students (for example, ability to concentrate, etc.)
Students studying "Sports for the whole class" have better results compared to their peers	Pearson Correlation	1	.221	.147
	Sig. (2-tailed)		.057	.207
	N	75	75	75
I believe that additional sports activities have a positive effect on the success of students	Pearson Correlation	.221	1	.628**
	Sig. (2-tailed)	.057		.000
	N	75	75	75
I believe that additional sports activities have a positive effect on the work ethic of students (for example, ability to concentrate, etc.)	Pearson Correlation	.147	.628**	1
	Sig. (2-tailed)	.207	.000	
	N	75	75	75

**. Correlation is significant at the 0.01 level (2-tailed).

Considering the content of the relevant statements and the previously discussed correlation analysis, attention should be paid to essential aspects. Suppose the sports integration process could meaningfully improve the students' work ethic while also improving the learning outcomes. In that case, the obtained correlation should have been higher, according to the study's author.

Ensuring the project's integration into daily learning requires a significant management role. It is necessary to provide the sports lessons planned within the project, which require delegation and attraction skills. The study's author wanted to understand how the school directors evaluate the relevant process related to integrating additional sports lessons.

The answers given by the school management establish higher-level correlations with each other. For example, among the statements that mention the impact of information on student achievements and the integration of sports on the overall development of the school.

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Table 4. Obtained correlations from schools' management responses to the statements

Correlations		I believe that the integration of sports has helped the school to develop	I think that the integration of sports has allowed students to improve their learning outcomes	I think that the integration of sports has allowed students to improve their work ethic
I believe that the integration of sports has helped the school to develop	Pearson Correlation	1	.871**	.606**
	Sig. (2-tailed)		.000	.001
	N	28	28	28
I think that the integration of sports has allowed students to improve their learning outcomes	Pearson Correlation	.871**	1	.661**
	Sig. (2-tailed)	.000		.000
	N	28	28	28
I think that the integration of sports has allowed students to improve their work ethic	Pearson Correlation	.606**	.661**	1
	Sig. (2-tailed)	.001	.000	
	N	28	28	28

**. Correlation is significant at the 0.01 level (2-tailed).

Obtained correlation with high reliability (p-value 0.00), correlation – 0.871. It can be concluded that based on the sports integration process, students' performance improves, which in turn contributes to the overall development of the school. A slightly lower level of correlation was formed between the statements about the school's development and the student's work ethic. The obtained correlation is 0.606.

Conclusion

The author of the study states that both in the analysis of the theory and in the empirical part, it can be observed that sports activities are evaluated as good. Sports scientists have indicated that regular sports activities improve physical fitness and reduce other risks – for example, psychological disorders, including anxiety or depression. It can be a vital deciding factor in the teenage years, so regular sports activities should be included in children's daily life at the beginning of school.

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- Evaluating the empirical part of the study, it can be concluded that school principals indicated a more pronounced positive influence. Higher correlations than correlations between statements are observed;
- From the students' point of view, it can be concluded that sports have a positive effect on two interrelated processes – work ethic and ability to concentrate, which intertwine together with the improvement of academic achievements;
- The change in students' eating habits is also positively evaluated;
- The teacher respondents do not observe such a pronounced positive trend in connection with the existence of additional sports activities. Although there is a high correlation concerning the overall development of students, theoretically compared to peers, the assessment is not so pronounced and specific.

Although the study reported only a few of the correlations made, the number of respondents is large enough to make verified claims. By implementing additional sports lessons in their daily learning process, schools ensure the recommendations mentioned by the WHO, as well as promote the development of the school and the students in various forms.

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Support to Children at Risk of Social Exclusion as a Component of Inclusive Education in Croatian Early Childhood Education and Care Institutions[1]

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ABSTRACT

Children's participation in high-quality early childhood education and care (hereinafter ECEC) institutions and inclusive pedagogical practice represent an important compensatory mechanism that significantly reduces the risk of children's social exclusion. The role of ECEC is to contribute to the reduction or possible elimination of the risks of social exclusion (hereinafter RSE) of children and the consequences of their unfavourable actions through systematic preventive action. The scientific project "Models of Response to Educational Needs of Children at Risk of Social Exclusion in ECEC Institutions" (MORENEC, hereafter the Project MORENEC), funded by the Croatian Science Foundation, is focused on issues arising from this topic. This research is an integral part of the Project, and its goal is to analyse how Croatian ECEC institutions contribute to the prevention of the RSE of children in order to prevent unfavourable developmental outcomes. The data were collected on a sample of 65 ECEC institutions, which is representative for Croatia. The obtained results indicate an uneven practice of preventing the RSE in Croatian ECEC institutions. Various methods, programmes and techniques are used to prevent the RSE of children. Only a third of ECEC institutions implement comprehensive, structured preventive programs, and only a fifth of institutions offer different forms of support for parents.

The authors conclude that systematic support for children and families at RSE in the Croatian ECEC system, has not yet fully taken root. The findings point to the need to improve the preventive capacities of the Croatian ECEC system, with an emphasis on expanding the offer of science-based programmes led by educated staff, which includes various forms of support for children at RSE and their family members.

Keywords: risk of social exclusion, early and preschool education and care, universal prevention, selective prevention, Croatia

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Introduction

Inclusive education is the process of responding to the various educational needs of children by increasing their participation in culture, community and learning and reducing their exclusion from education (UNESCO, 2005). Children's participation in high-quality ECEC programmes is a key component of inclusive education and has a positive impact on a child's development from an early age (Biedinger et al., 2008; Love et al., 2003). Children's participation in high-quality early childhood education care programmes (ECEC) is a key component of inclusive education and has a positive impact on child development from an early age, while their accessibility together with inclusive pedagogical practice represent an important compensatory mechanism that significantly reduces the risk of children's social exclusion (Balladares & Kankaraš, 2020). Social exclusion of children is defined as a multidimensional construct that includes economic, social, cultural, health and other aspects of disadvantage and deprivation that individually or in combination can have an unfavourable impact on the development of a child in childhood and adulthood (Bouillet & Domović, 2021; Sukkar et al., 2017). The role of high-quality ECEC programmes is to contribute to the reduction or elimination of the RSE and the consequences of their unfavourable effects through systematic preventive action. Until now, there has been no systematic research in Croatia on the role and possibilities of ECEC institutions to contribute to the prevention of children's RSE. The scientific project "Models of response to educational needs of children at risk of social exclusion in ECEC institutions" funded by the Croatian Science Foundation is dedicated to this topic. One of the goals of the Project MORENEC is to investigate the effectiveness of available support programmes for families and children at RSE in Croatian ECEC institutions. The goal of this work emerged from the stated goal of the Project, which is to analyse the ways in which Croatian ECEC institutions contribute to the prevention of RSE of children with the aim of preventing unfavourable developmental outcomes.

The prevention of RSE of children in ECEC

ECEC in Croatia is regulated by the Preschool Education Law (1997) and related by-laws. It includes education and care for children of early and preschool age, and is realised through programmes of education, health care, nutrition and social care for children from six months until they start primary school. ECEC forms the initial level of the educational system and, with the exception of the preschool programme (which is compulsory for children one year before entering primary school), is not compulsory for all children. It is divided into two educational cycles:

1) nursery (6 month – 3 yr.) and
2) kindergarten (3 yr.– 7 yr.).

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ECEC institutions are expected to provide the best possible conditions and support for the successful learning and integral development of every child, because every child has the right to experience belonging, to be equally valued and treated with respect, which are important features of inclusive education (Berge & Johansson, 2021) and a prerequisite for the prevention of RSE of children (Bašić, 2009; Dunst, 2009; Sukkar et al., 2017). The starting points, principles, values and goals of ECEC are defined by the National Curriculum for ECEC (hereinafter National curriculum, 2015). The document promotes an inclusive approach because it advocates abandoning unified, unique standards for all children in favour of respecting and accepting the diversity of children, primarily through the implementation of various educational programmes that have the character of preventing unfavourable developmental outcomes of children at RSE.

The term prevention is widely used to denote any system of measures or programmes aimed at reducing or eliminating risk factors and the consequences of their action (Dadds & Fraser, 2003) by supporting the positive development of children and developing their resilience (Miljević-Riđički et al., 2017). World Health Organization (WHO, 2004) classifies prevention on three levels: *universal, selective* and *indicated*, depending on the level of risk in the population or group targeted by prevention measures. *Universal* prevention refers to the general public or the entire population, not identified on the basis of individual risk (Dadds & Fraser, 2003; Stoolmiller et al., 2000). In ECEC institutions, universal prevention is intended for all children and is often implemented in the curricula and educational work of preschool teachers (Ştefan & Miclea, 2012). The goal of universal prevention is most often the development of children's socio-emotional competences (Aksoy, 2019; Nelson et al., 2003; Ştefan & Miclea, 2012). *Selective* prevention is aimed at individuals or subgroups of the population whose risk in a certain area is higher than average (European Monitoring Centre for Drugs and Drug Addiction, 2019). Within ECEC, it covers the learning of social skills of children at RSE, but also systematic work with parents (Mikas et al., 2013). Indicated prevention is aimed at high-risk individuals with visible signs pointing to a certain problem (Sakashita & Oyama, 2019).

Preventive programmes have a positive effect on the quality of life of children of early and preschool age because they act as a protective factor and increase the opportunities for children's later academic achievements (Aksoy, 2019; Nelson et al., 2003). Many studies show that universal prevention programmes have a great effect on improving children's socio-emotional, behavioural and cognitive skills (Catalano et al., 2002; Dadds & Roth, 2008; Domitrovich et al., 2007; Greenberg et al., 2001; Manning et al., 2010), while some meta-analyses (Gates et al., 2017; Turner et al., 2018) attribute the improvement of social skills to selective and indicated prevention. The involvement of parents in prevention programmes is an important element of successful prevention programmes (Hahlweg et al.,

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2010; Ştefan & Miclea, 2012) because it encourages the transfer of skills acquired within the ECEC institution to the relationship between parent and child (Hughes et al., 2005; Manning et al., 2010). Such programmes contribute to the reduction of aggressive and unacceptable behaviour of children at RSE in the family and institutional environment (Bašić, 2009; Manning et al., 2010; Webster-Stratton et al., 2003). The quality and effectiveness of prevention programmes in ECEC institutions depend on the professional competence of preschool teachers (Bašić, 2009; Lochman & Wells, 2002; Tatalović Vorkapić et al., 2012; Webster-Stratton et al., 2008) which are the cornerstone of comprehensive prevention. It covers all three levels of prevention, with integrated action towards the child, family and community. The positive effects of such programmes are multiple (Nelson et al., 2003), and are visible in the development of social competence and the reduction of children's social withdrawal (Domitrovich et al., 2007). Therefore, the systematic support of ECEC institutions for children at RSE is reflected in the offer of various types of prevention programmes led by educated preschool teachers, with the involvement of parents/guardians of children.

RSE prevention model in the ECEC system in Croatia

In Croatia, there is very little research devoted to the evaluation of RSE prevention programmes in ECEC institutions. The Project MORENEC is aimed at achieving this goal by developing a model of response to the educational needs of children at RSE, which is based on a theoretical model of evaluation and development of quality ECEC (Vlasov et al., 2019, Figure 1).

The model points to the need of implementing the ISSA quality standards within measures to support families and children at RSE, as the starting point of the value system from which pedagogical practice emerges. The ISSA quality standards describe the value system that defines quality, the goals that ECEC strives for, and the reasons why these goals are considered important. When it comes to children at RSE, as a rule, their needs require additional support measures that form an integral part of the structural and process factors of quality. These factors are in dynamic interaction, and are dependent on national, regional, local and institutional policies. Structural factors of quality are related to the organisation, accessibility and conceptualisation of the ECEC system and the division of responsibilities among different levels, and are defined by legal regulations. As such, they provide prerequisites for pedagogical practice that reflects the process factors of quality, that is, the ways, forms and contents of realising the key function of institutional ECEC. Pedagogical practice takes place at the level of the individual and institution, and is directly related to the experiences of children, while it operationalises the institutional culture. It describes how the goals and contents of ECEC are realised in practice, in the interaction of individuals and contexts. When it comes to children at RSE, it answers the

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question of how the ECEC system contributes to the prevention of unfavourable developmental outcomes of children and ensures their well-being, acting as a factor of protection in the child's social environment. It is not possible to precisely determine these effects if pedagogical practice and support measures for families and children at RSE are not continuously evaluated. That is why the model implies the application of four interconnected phases or steps, namely: assessment of needs, planning of educational intervention within the framework of appropriate pedagogical practice, implementation and evaluation.
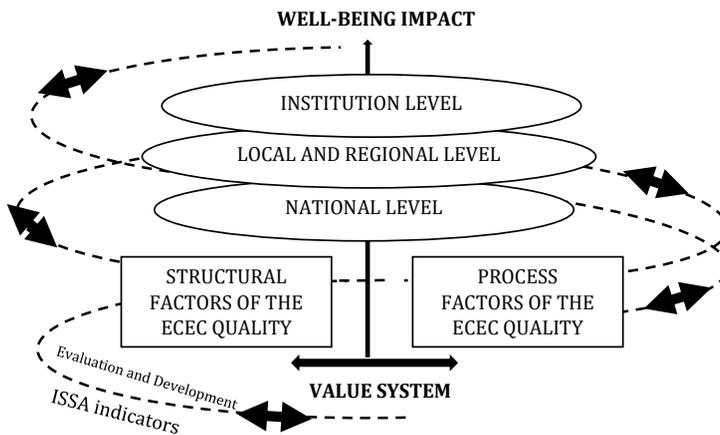
Figure 1. A theoretical model of mapping support measures in ECEC institutions (adjusted according to Vlasov et al., 2019, p. 40)

The first step, *the assessment of needs*, includes the assessment of children's RSE and the definition of criteria for the inclusion of children and their family members in the intervention. The assessment is aimed at getting to know, understand and interpret the risks, needs and strengths of children and their ecological system, whereby such an assessment is considered a key link in ensuring appropriate and timely intervention. The second step, *planning the intervention*, refers to the definition of intervention's specific goals with regard to the identified RSE of children, the selection of activities that will achieve, the defined goals and the elaboration of the activity plan (e.g., duration, frequency, performers, resources). The third step, *the implementation of intervention*, refers to the professional activities of educational and other experts in the ECEC institution in accordance with the previously defined intervention plan, and refers to the application of educational strategies, programmes, methods and techniques aimed at the prevention of RSE of children. The fourth step, *evaluation of the intervention*, is based on the

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assessment of the effectiveness of the programme. It is a periodic assessment of the cost-effectiveness, efficiency, impact, sustainability and relevance of a specific programme, project or intervention in the context of established goals.

Examples of preventive programmes in ECEC institutions in Croatia

This article is focused on the mapping of pedagogical practice that contributes to the prevention of children's RSE, and includes the implementation of evaluated programmes at the level of universal prevention in ECEC institutions and the application of strategies and methods in direct work with children at RSE, at the level of selective prevention. For example, at the level of universal prevention, the following programmes are implemented:

- **A resilience curriculum for early years and primary schools** (RESCUR) offers key tools for overcoming obstacles in their development, with the use of personal strength as part of activities for social and emotional learning of preschool and primary school children (Miljević-Riđički et al., 2015).

- **CAP programme** is aimed at the prevention of child abuse with the aim of encouraging the active commitment of the local community and educational systems for a comprehensive approach to the prevention of violence against and among children, through the implementation of structured workshops (Parents association "Korak po korak", 2014).

- **Growing Up Together** is a programme of workshops for parents, which is carried out with the aim of creating a stimulating and empowering environment in which parents get to know their role as parents, recognise how they relate to their child, and see other possibilities of relating to the child (Pećnik & Starc, 2010).

- **Appreciation of Diversity to a Culture of Peace** is implemented with the aim of developing socio-emotional competences of children in ECEC curricula, through the realisation of curricular activities in four areas: identity and belonging, expression of emotions and thoughts, appreciation of diversity, safety and responsibility (Bouillet & Šarić, 2016).

- **Problem-solving Management Model** (UPS model) refers to teaching how to solve problems by understanding human behaviour, providing assistance in meeting human needs, and developing problem-solving skills. UPS model helps the child to independently find a responsible solution to a problem that will not endanger him/herself, others or property (Modrić, 2021).

- **Persona doll** is a method in which a doll is used as a mediator between preschool teachers and children with an emphasis on different anti-discrimination scenarios. Recognition and appropriate response to injustice in society is part of education for social justice, which is applied with the aim of developing children's emotional competences (Logue & Kim, 2011).

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Examples of educational practices and programs at the level of selective prevention in the ECEC system:

- **Small Creative Socialisation Groups** is a programme aimed at the process of socialisation and training for successful coping of children at RSE and strengthening of protection factors in children's environment (Janković & Richter, 2010).

- **Growing up Together Plus**, as a version of the programme *Growing up Together*, for parents of children with developmental disabilities (Pećnik & Starc, 2010).

- **Application of behaviour modification techniques** within social modelling (Bandura, 1977). These techniques are aimed at directly changing the child's behaviour, relying on the principles of learning (e.g., loss of privileges, positive feedback, rewards, behaviour rules checking, behaviour contract, restitution, self-reflection, time-out).

- **Mediation** i.e., intervention in negotiation or conflict resolution by an impartial person to achieve a mutually satisfactory solution. It contributes to personal growth and development, long-term problem solving and the promotion of equality and social justice (Munivrana et al., 2017).

- **Restitution** is an approach to strengthening children, a substitute for punishment and supervision, a means of developing self-discipline, and at the same time it is a collaborative process in which children learn to seek solutions to problems and learn about rights and obligations (Chelsom Gossen, 1994). It enables the redirection of children's behaviour because it is a proactive process, which leads the child to stop avoiding embarrassment and turn to a better relationship with other people and appropriate ways of social development.

- **Play therapy** is a measure of support for children who have difficulties in socio-emotional development and/or behaviour, in the form of workshops that help create contact and an emotional connection with a child at risk of developing behavioural problems (Ray et al., 2001).

The presented examples are part of pedagogical practices that some ECEC institutions include in their curricula, but they are not mandatory, so some institutions apply them and some do not.

Research methods

With the aim of determining and analysing the ways in which Croatian ECEC institutions provide support to families and children in order to prevent unfavourable developmental outcomes of children at RSE, within the framework of the Project MORENEC, a mapping of pedagogical practice was carried out on

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a representative sample of 65 ECEC institutions (10.4% of the total number of ECEC institutions in Croatia at the time of data collection[2]). The sample is representative according to: the criteria of number of children between the ages of 5 and 7 included in ECEC programs in 6 Croatian regions, according to the founder of the institution, the administrative status of the local self-government unit in which it operates and the size of the ECEC institution. The size of the ECEC institution is determined by the number of preschool teachers employed, and ranges from 2 to 320, and the average number of preschool teachers in kindergartens is 40. In the included kindergartens, the number of professional associates ranges from 0 to 16, with an average of 3 employed within one institution. The number of facilities in which the ECEC institution operates varies on a continuum from 1 to 26, and the average number of facilities per institution is 4. In the included ECEC institutions, the number of enrolled children ranges from 31 to 2972, while an average of 369 children are enrolled in kindergarten.

Representatives of ECEC institutions, in cooperation with members of the research team, completed The Protocol for mapping measures to support families and children at RSE in ECEC institutions, which was developed as part of the Project MORENEC. The Protocol consists of questions related to: assessment methods for children at RSE, ways in which parents of children at RSE can be involved in the work of the educational institution, forms of support for families of children at RSE offered by ECEC institutions, available programs, methods and techniques for preventing children's RSE, sources of funding for prevention programs, methods of evaluation and quality assurance of support measures for families and children at RSE. In addition to the above, a detailed explanation of one support measure used in the ECEC institution is requested i.e., data on the RSE group to which the measure is directed, the number of users of the measure, the objectives of the measure, activities and methods of evaluating the success of the measure. This paper presents basic information on the representation of the 4 steps of the RSE prevention model in ECEC institutions (needs assessment, planning, implementation and evaluation).

The data were collected in the spring of 2022, and were processed in the SPSS program (version 26) at the level of descriptive statistics (percentages) and using the non-parametric Spearman correlation coefficient.

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[2] Croatian Bureau of Statistics (2021). *Kindergartens and other legal entities that implement preschool education programs, the beginning of the pedagogical year 2020./21.* Zagreb: Croatian Bureau of Statistics. www.dzs.hr

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Results

The first step in the prevention of children at RSE refers to the assessment of needs, that is, their recognition. Table 1 shows the frequency of application of different assessment methods in ECEC institutions, according to whether they are applied at the level of the institution, individual facilities, educational groups or specific children.

Table 1. The frequency of application of different assessment methods of children at RSE in ECEC institutions (%)

RSE assessment methods	Institution	Facilities	Groups	Children	Doesn't apply
Initial interview with the child before enrolling in the ECEC programme	69.2	1.5	1.5	9.2	18.5
Initial interview with the child's parents/guardians before enrolling in the ECEC programme	93.8	0	0	4.6	1.5
Regular individual meetings with parents/guardians of the child during the pedagogical year	70.8	0	7.7	21.5	0
Use of a standardised measuring instrument to assess the child's developmental status	30.8	1.5	4.6	29.2	33.8
Using internal scales to assess children's developmental status	58.5	3.1	10.8	16.9	10.8
Individual assessments of professional associates in the kindergarten	44.6	1.5	1.5	41.5	10.8
Comprehensive team differentiated assessment of the child	27.7	1.5	1.5	55.4	13.8
Creation and monitoring of the child's development map	50.8	4.6	27.7	3.1	13.8
Observation of the child in the educational group by a member of the professional team	47.7	1.5	3.1	40.0	7.7

It can be seen that ECEC institutions use different methods of assessing RSE of children, while the practice itself is extremely uneven. Most institutions apply initial interviews with the child's parents/guardians before enrolling in the ECEC program. Two-thirds of institutions use regular individual interviews with the child's parents/guardians during the pedagogical year, and initial interviews with the child before enrolling in the ECEC programme (69.2%). Only a third of institutions apply comprehensive team differentiated assessment of children, or standardised measuring instruments. Summary indicators of the application of different methods of RSE assessment of children in individual ECEC institutions are presented in the Figure 2.

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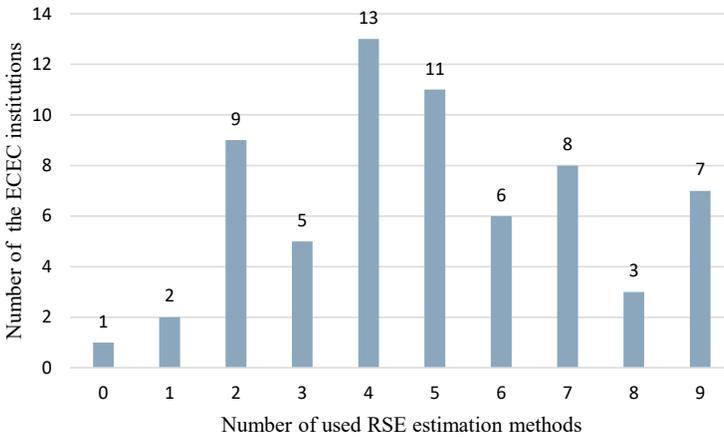
Figure 2. ECEC institutions according to the number of applied methods of assessment of children's RSE

The assessment methods used in institutions range from 0 to 9, while more than half (58%) use 2 to 5 methods. A modest assessment practice is noticeable in (4.6%) institutions that do not assess RSE of children, or use only one assessment method. On the other hand, there are institutions with a very rich practice of applying different methods of assessing children's RSE (37%).

The purpose of the assessment is the planning and implementation of various support measures for children, which inevitably includes work with parents. Table 2 shows the forms of cooperation with parents in Croatian ECEC institutions.

The findings show that the most frequent practice of working with parents is individual counselling work. Two-thirds of institutions offer parent education through lectures and workshops, while only one-fifth of institutions organise group counselling work with parents. Support groups for parents are offered by one-third of ECEC institutions in Croatia.

Table 2. Frequency of different forms of support for families of children at RSE in ECEC institutions (%)

Forms of support for families of children at RSE	NO	YES
Lectures	29.2	70.8
Workshops	32.3	67.7
Support groups for parents/guardians	69.2	30.8
Individual counselling work with parents/guardians	4.6	95.4
Group counselling work with parents/guardians	80.0	20.0
Informing about social and health services in the community	27.7	72.3

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The share of ECEC institutions according to the number of forms of support they offer to families is shown in the Figure 3.
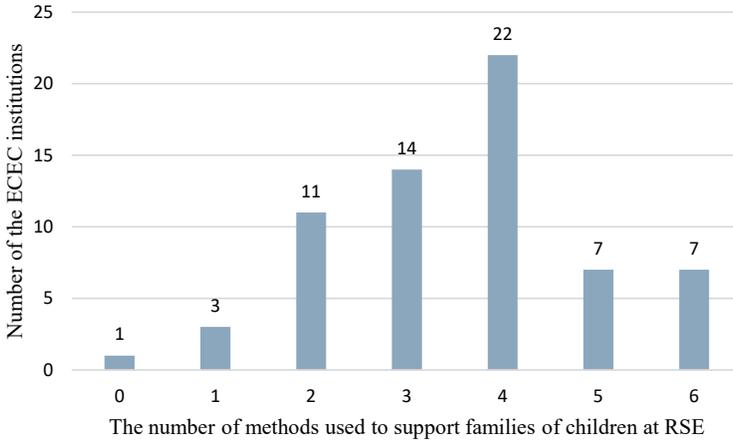
Figure 3. ECEC institutions, according to the number of support forms for parents

The data point to the conclusion that the Croatian ECEC system is dominated by institutions that offer parents 2 to 4 forms of support (72.3%). A modest support form practice involves 6% institutions, while a fifth of institutions have developed a diverse support practice.

Data on the distribution of structured children's RSE prevention programme and behaviour modification techniques are presented in the Table 3.

Table 3. Frequency of implementation of programmes, methods and techniques of prevention of children at RSE in ECEC institutions (%)

Programmes, methods and techniques of prevention of children at RSE	Institution	Facilities	Groups	Doesn't apply
CAP programme	23.1	4.6	7.7	64.6
RESCUR	1.5	0	4.6	93.8
Appreciating Diversity Leads to a Culture of Peace	6.2	1.5	12.3	80.0
Growing Up Together	50.8	1.5	4.6	43.1
Growing Up Together Plus	16.9	1.5	3.1	78.5
Mediation	6.2	3.1	6.2	84.6
Restitution	6.2	0	7.7	86.2
Modelling	13.8	0	10.8	75.4
Play therapy	6.2	4.6	15.4	73.8
Persona doll	7.7	0	16.9	75.4
Problem-solving Management	12.3	3.1	9.2	75.4

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Overall, the findings point to the conclusion that structured prevention programs for children at RSE are implemented by a minority of ECEC institutions. The most often applied programme is Growing Up Together, while other programmes took root in fewer institutions. Selective prevention programmes in ECEC institutions almost do not exist, while the program Growing Up Together Plus is carried out in one fifth of institutions.

In summary, only a third of ECEC institutions have developed a comprehensive strategy for the prevention of children at RSE, which is reflected in the offer of preventive programmes at the level of individual institutions. The practice of evaluating the effectiveness of programmes to prevent RSE of children is relatively modest, and most often comes down to keeping pedagogical documentation and internal evaluation, while other forms of evaluation are extremely rare (Table 4).

Table 4. The frequency of application of evaluation methods and quality assurance of support measures for families and children at RSE in ECEC institutions (%)

Methods of evaluation and quality assurance of support measures	NO	YES
Ensuring the internal education of preschool teachers for a specific programme/measure/method	26.2	73.8
Ensuring external education of preschool teachers for a specific programme/measure/method	35.4	64.6
Organising regular internal support of professionals during the implementation of the programme/measure/method	50.8	49.2
Organising regular external support of professionals (supervision) during the implementation of the programme/measure/method	73.8	26.2
Management and monitoring of pedagogical documentation	4.6	95.4
By applying scientific evaluation	89.2	10.8
System of internal evaluation	23.1	76.9
Through occasional external evaluation	81.5	18.5

More than half of the ECEC institutions provide external education for preschool teachers for the application of specific forms of prevention for children at RSE, and almost half of the institutions offer internal support from a professional support team. In summary, the majority of institutions (80%) implement 3 or more evaluation methods, although it is mainly an evaluation of the usual pedagogical practice that is not focused on the prevention of the specificities of children at RSE (Figure 4).

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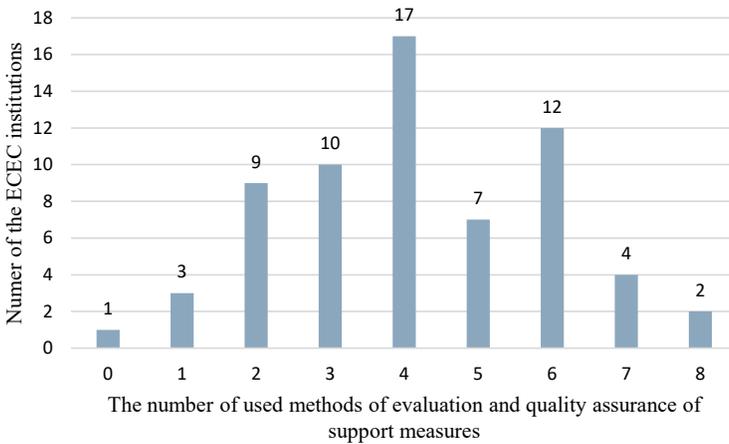
Figure 4. ECEC institutions according to the number of methods of evaluation of support measures for families and children at RSE

The results shown in Table 5 show that there is a statistically significant relationship between the components (steps) of prevention of children at RSE. Institutions that implement comprehensive prevention programmes for children at RSE offer several forms of support to families of children at RSE. They are directed in several different ways towards evaluating and ensuring the quality of support measures for families and children at RSE.

Table 5. Spearman correlation coefficient on composite variables

Components of RSE prevention	Needs assessment	Parents support	Comprehensive programmes	Evaluation
Needs assessment	1	.113	.155	.173
Parents support		1	.434**	.578**
Comprehensive programmes			1	.385**
Evaluation				1

** p ‹ .01

Research limitations

The research is based on information received from representatives of ECEC institutions and not on objective data. However, this is the first research of this type conducted in Croatia, so further analyses are needed to verify the obtained results. In addition, the research is of a descriptive nature, which limits the

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possibilities of finding a connection between the described preventive practice and the well-being of children at RSE. It is important to emphasise that the Project MORENEC is ongoing and that the evaluation of the described support measures is yet to follow.

Discussion

The results of the research indicate an uneven pedagogical practice of prevention aimed at children at RSE in the form of reducing and preventing unfavourable developmental outcomes of children and ensuring their well-being in ECEC institutions in Croatia. Earlier research (Bouillet & Antulić Majcen, 2022; Khan et al., 2015) showed that an assessment aimed at getting to know and understand the individual risks and needs of children is considered crucial in providing interventions that lead to an increase in favourable and a decrease in unfavourable developmental outcomes of children. This research showed that assessment of children at RSE in ECEC institutions is done in different ways using different methods. Institutions that use 2 to 5 methods predominate, while there are still institutions that do not assess children at RSE at all or use only one method. Although the involvement of parents in prevention programmes has been recognised as a key element in the successful prevention of children's RSE in many studies (Hahlweg et al., 2010; Manning et al., 2010; Ştefan & Miclea, 2012), different forms of parent support and their involvement in the work of the educational institution are implemented only in a fifth of ECEC institutions in Croatia. Most ECEC institutions offer 2 to 4 forms of support to parents, while there are still institutions that do not have integrated support for parents in their practice. Although comprehensive prevention, which includes all three levels of prevention and works towards the child, family and community has been recognised in previous research as very successful (Domitrovich et al., 2007; Nelson et al., 2003), the results of this research indicate that only a third of ECEC institutions in Croatia implement structured, comprehensive programmes for the prevention of children's RSE. The evaluation of the effectiveness of the program in ECEC institutions in Croatia is most often carried out using 3 or more evaluation methods, which in most cases are not aimed at the prevention of specific RSE of children, so we cannot even talk about precisely defined indicators of the success and effectiveness of interventions (Španja, 2019). Research (Tatalović Vorkapić et al., 2012; Webster-Stratton et al., 2008) have shown that the positive effect on child development is most visible in programmes in which preschool teachers are additionally educated for its implementation, and such practice in the form of conducting external and internal education of preschool teachers for the application of specific forms of prevention of children's RSE is carried out by more than 50% of institutions in Croatia.

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Conclusion

The goal of this research is to determine and analyse the ways in which ECEC institutions in Croatia provide support to families and children in order to prevent unfavourable developmental outcomes of children at RSE. The research results indicate the existence of an uneven practice of providing support to families and children at RSE. Although a third of ECEC institutions offer various support measures to families and children at RSE, there are still institutions that do not offer any support measures. From all of the above, we can conclude that the systematic support of ECEC institutions for children at RSE, which is reflected in the offer of various types of prevention programmes by educated preschool teachers, with the involvement of parents/guardians of children in the Croatian context, has not yet fully taken root.

That is why it seems justified to invest efforts that will reflect the theoretical model of mapping support measures in the preventive practices of the ECEC institutions in Croatia. This is the first and important step in improving the possibility of developing the structural and process factors of the quality of ECEC institutions, which are a prerequisite for an adequate response of the ECEC system to RSE and the prevention of possible unfavourable development outcomes related to them.

Aknowledgment

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Implementation of Equal Opportunities for Children with Autism Spectrum Disorder in Pre-School Education Institution

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ABSTRACT

With the entry into force of the principles of democracy in modern society, inclusive education that means the right of all people to education, ensuring the presence, participation and progress and, above all, equal opportunities of all pupils, is becoming important. There are more and more children in the country who are being diagnosed with autism spectrum disorder, but their fate is determined not by the disorder itself, but by psychological, social and pedagogical rehabilitation. It is necessary to provide a child with special educational needs with the opportunity to use the services of specialists, help one constructively so that (s)he becomes as involved in the life of society as possible, could develop one's personality and improve spiritually (*Convention on the Rights of the Child*, 1989; *Lithuania's Progress Strategy "Lithuania 2030"* 2012). The aim is to reveal teachers' attitude about the possibilities of the implementation of equal opportunities for children with autism spectrum disorder in the pre-school education institution. To achieve the aim, a qualitative study using an in-depth interview method, was conducted. The qualitative content analysis was used to process the research data. The findings of the research revealed that teachers believe that opportunities to ensure equal rights for children with autism are limited: it is difficult to ensure the safety of children; teachers do not have assistants; premises are not fully adapted; it is hard to change the established negative attitude of other people. Nevertheless, teachers provide individualized education opportunities for children with autism spectrum disorder; provide them with appropriate and safe means of education; create a separate space in the group, communicate and cooperate with children's parents, thus ensuring more effective education; involve the child in social activities.

Keywords: autism spectrum disorder, children with special educational needs, inclusive education, pre-school education institution

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Introduction

Like other European countries, Lithuania has joined international treaties that declare basic social, economic, civil and political human rights. A child, as every member of our society, is the holder of all human rights. *The United Nations Convention on the Rights of Persons with Disabilities* (2006), *UNESCO Salamanca Statement and Framework for Action on Special Needs Education (1994), the United Nations Convention on the Rights of the Child (1989)* and the provisions of other international treaties and agreements provide for the rights of children with special educational needs (hereinafter: SEN). All of the mentioned documents are based on the principle of non-discrimination and the concept of positive obligations assumed by the state towards these children. *The United Nations Convention on the Rights of the Child* (1989) obliges countries to ensure an inclusive education system at all levels that is accessible to SEN children and that educational services are of high quality and adapted to the individual educational needs of each person, making it possible to get free education in the general education system.

With the establishment of democratic principles in the modern society, the inclusion of SEN children in society becomes very important. At the same time, the number of children diagnosed with autism is increasing in the country. Autism is the third most common childhood disorder after intellectual disability and language disorder (Zager et al., 2016). According to Aleksienė (2016), statistical data from various countries show that autism is diagnosed more and more often, children with this disorder are born in various families regardless of parents' education, social status or race. East et al. (2008) note that autism is a multifaceted development disorder, and since 1980, the idea of the autism spectrum disorder has been widely recognized. According to Sicile-Kira (2014), Mikulėnaitė et al. (2004), Robledo et al. (2005), Jokubaitienė et al. (2019), autism is diagnosed four times more often in boys, but girls suffer from a more severe form of this disorder. As stated by Lesinskienė et al. (2002), autism covers many areas of mental functioning and severely impairs the child's development and social adaptation, therefore autism is classified as a group of multifaceted disorders. Multifaceted developmental disorders are manifested by qualitative impairments in social interaction and communication as well as limited, stereotyped and repetitive nature of interests and activities.

The fate of children with autism spectrum disorder (hereinafter: ASD) is determined not by the disorder itself, but by psychological, social, and pedagogical rehabilitation. It is necessary to provide a child with ASD with an opportunity to use the services of specialists, help one constructively so that the child becomes as involved in the life of society as possible, could develop one's personality and improve spiritually. Many authors (Lesinskienė et al., 2002; Ivoškuvienė, et al., 2002; Frith, 2003; Mikulėnaitė et al., 2004; Robledo et al., 2005; East, et al.,

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2008; Notbohm, 2012; Гилберг et al., 2013; Zager et al., 2016; Aleksienė, 2016) claim that such involvement is caused by:

1) social environment. ASD children have difficulty in understanding social situations, thus they often get confused or agitated when interacting with other people. It is difficult for ASD children to understand the behaviour of others, the meaning of the skills they have and are developing. They often fail to apply the things they learn in one environment in another similar situation. They mechanically perform tasks, do not understand the meaning of activities and experiences they have had. ASD children do not recognize the same people in other environments. They do not realize that the same person can be in a different place. Therefore, it is extremely important to determine whether the child really recognizes other people;

2) communication difficulties. Children find it difficult to understand both verbal and non-verbal communication and use communication tools such as eye contact, facial expression, gestures, and body language;

3) disorders of thought and imagination. Already at an early age it is noticeable that the child's playful and imaginative activities are disrupted. Children with ASD like a routine that helps them understand their surroundings, thus even the smallest changes can cause them great stress. ASD children may find it difficult to adapt in the pre-school education institution, as they are often characterized by hand flapping, rocking or spinning in circles; increased sensitivity to noise, smells, touch or visual stimuli; tendency to self-harm; aggressive behaviour; hyperactivity; strange posture or gait; unexplained fears or phobias.

According to Prokopčik (2012), the child is vulnerable and needs special assistance to be able to exercise one's rights. When making decisions that affect the child's life, the child's interests must be taken into account first. The interests of parents, society and the state must not be considered superior. *The Declaration of the Rights of the Child* (1959) states that the child has the right to education. One has the right to free education, parents and other persons responsible for one's upbringing must take care of the child's well-being. The child must be given the conditions to play and to grow and develop while playing. Society must not prevent the child from exercising this right. *The Convention on the Rights of the Child* (1989) also emphasizes that every child must be given equal opportunities to develop their abilities. It is noted that internal rules of the educational institution cannot violate the rights and dignity of the child. Republic of Lithuania *Law on the Amendment of the Law on Equal Treatment* (2020) emphasizes that equal treatment of people must be established and implemented regardless of one's gender, race, nationality, citizenship, language, origin, social status, disability, ethnicity, etc. The Lithuania's progress strategy "*Lithuania 2030*" (2012) indicates that the task of a solidary society is to ensure the availability of pre-school

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education institutions for child care. The *Strategy* emphasizes that too little attention is paid to individual education, which is so important for the child with an autism spectrum disorder, and it could not only enable acquisition of basic knowledge, but also create conditions for providing higher abilities.

As noted by many researchers (Ališauskas et al., 2011; Ryann et al., 2012; Giedrienė, 2015; Iacono et al., 2016; Thiemann-Bourque et al., 2016; Ewing et al., 2017; Crispel et al., 2019; Braslauskienė et al., 2021), inclusive education is a universal right, but in order to implement it, it is necessary to formulate a policy aimed at providing quality education and equal opportunity services to every citizen. Educational institutions must be equipped with the necessary financial, human, educational services and technical resources. According to the authors, the following conditions are necessary for successful inclusion: a flexible education system; diversity must be valued; all obstacles must be removed (the environment, curriculum and materials must be adapted, sceptic attitudes must disappear, there should be enough equipment, socialization and communication conditions should be improved, the availability of oral and other means of communication); assistance provided to teachers; there must be team work; strong leadership in educational institutions; harmony must prevail among children; there must be collaboration between parents, professionals and volunteers.

Sufficiently abundant scientific research allows to claim that considerable attention is paid to the implementation of inclusive education of SEN children in educational institutions, but it is noticeable that the aspects of the implementation of equal opportunities for children with ASD in a pre-school education institution are not widely presented and analysed. Accordingly, the scientific problem of the following research is: what are the features of the implementation of equal opportunities for children with autism spectrum disorder in a pre-school education institution? The aim of the work is to reveal the features of the implementation of equal opportunities for children with autism spectrum disorder in a pre-school education institution. Work methods: analysis of scientific literature and documents, qualitative research (semi-structured interview), qualitative data (content) analysis.

Methodology

In order to reveal features of ensuring equal opportunities for children with ASD in a pre-school education institution, a qualitative research method was chosen. The research data were collected by applying the *semi-structured interview instrument,* when the interview questions are formulated in advance and there is a possibility to freely change their order, ask follow-up questions, thus obtaining more detailed structured data, while the interview remains informal, and takes place in the form of conversation (Bitinas et al., 2008). According to Kardelis

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(2017), even though the interview method of data collection takes longer than the questionnaire survey method, it provides wider opportunities to get to know the subjects in more depth, clarify their answers, and ensure the completeness of the data. The choice of the *semi-structured interview* was determined by the flexibility, immediacy of this method and the possibility to use additional questions by taking into account the answers of the informants. It should be noted that the limitations of qualitative research are associated with the inevitable subjectivity in qualitative research (Luobikienė, 2011; Hesse-Biber et al., 2011; Bitinas, 2013). Therefore, even though the planning and conducting of the qualitative research met the requirements necessary for this type of research, the generalization of the research findings was limited by the small number of research participants. It is the data of qualitative research that are unique and specific only to the individuals who participated in a specific research.

The qualitative research was conducted in the period from December 2021 to March 2022. Criterion selection was used to select participants. There were 2 essential criteria for selecting informants: experience of an educator/educational support specialist (at least 3 years of work experience) in working with children with ASD and work in an educational institution that implements inclusive education. First of all, it was necessary to contact the administration of the institution that indicated pre-school teachers and educational support specialists, who have been working with children with ASD in the educational institution for at least 3 years. During the interview, 6 pre-school teachers (hereinafter: PT) and 5 educational support specialists (hereinafter: ESS) working in pre-school education institutions of Klaipėda city and Klaipėda district were interviewed. The questionnaire was formulated by taking into account the criteria for the selection of informants and assuming that these specific informants will communicate and express their opinions during the interview. All research participants are women. During the interview, the following topics were selected: what are the features of ensuring equal opportunities for children with ASD in a pre-school education institution; what is the organization of educational support in a pre-school education institution. The duration of the conversation with each research participant was 45 minutes. After informing the informant about the use of the recording equipment and after obtaining one's verbal consent, the conversation was recorded on a dictaphone.

Research data were collected in accordance with the aim and tasks of the research. The collected data were transcribed (rewritten) and analysed. Data analysis was carried out in the following order (Cohen et al., 2007; Kardelis, 2017; Žydžiūnaitė et al., 2017): writing down analytical notes while analysing the data, which, according to the aforementioned authors, promote analytic thinking and stimulate insight; afterwards, following this categorization was carried out (certain categories were distinguished and defined to facilitate the comparison of

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the elements belonging to them). While working with the text, first the primary categories were created, then they were reviewed, refined, subcategories were distinguished, and statements illustrating them were presented. The research was conducted in accordance with the principles of research ethics: benevolence, respect for the dignity of the person, the right to receive accurate information, justice (Žydžiūnaitė et al., 2017). Taking into account the general principles of research ethics, each research participant was free to decide on the participation in the research. The subjects were also assured of the confidentiality and anonymity of the received information. After the research report was prepared, the informants were offered to familiarize with it. Informants did not submit any comments.

Research findings

Data analysis of the opinion of pre-school teachers about the features of the implementation of equal opportunities for children with autism spectrum disorder in an educational institution

An insight into the features of ensuring equal opportunities for children in a pre-school education institution was provided during the research. The informants were asked: *"what difficulties did you face before admitting a child with ASD to the group, which opportunities for children are ensured and which ones are violated, it was clarified what are the opportunities and preventive means in order to ensure those equal opportunities for them"*. The obtained information is presented in Table 1.

Table 1. Features of ensuring equal opportunities in a pre-school education institution

Category	Subcategory	Number of statements
Difficulties	No	5
	Yes	1
Enforceable rights	Independence	4
	Freedom	4
	Right to education	3
	Child's wishes	2
	Respect and dignity	1
Violated rights	Safety	2
	Respect	2
	Freedom	2
Opportunities	Limited	4
	Ample, great	2
	Preventive means	6

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The data presented in Table 1 show that the majority (5 informants) indicated that there were no difficulties with the admission of a child with ASD to the group: *there were no difficulties from the management's side (…) at first, nobody mentioned the child's diagnosis (…) came to us, since nursery (…) there was nothing against (…) I think not (…) the director admits all (…).* 1 informant stated that there were difficulties: *the parents of some children weren't satisfied (…) the parents are afraid that their children might be harmed (…) an aggressive girl would bite, kick, scream, and parents would say that she doesn't belong here (…) there are complaints from parents (…).* Scientific literature shows that the attitude of both educators and parents of other children towards a different child still remain negative, though the situation is improving. The following is also confirmed by the answers of the informants, because only 1 out of 6 informants said that it was difficult for an ASD child to get admitted the group.

The assessment of equal opportunities for children with ASD in a pre-school education institution revealed that PT take the utmost account of ensuring of the child's independence, freedom and the right to education: *efforts are made to realize all rights of the child, to ensure equal opportunities (…) not ignored (…) if [s] he wants a separate space – one has it (…) we allow one to do what [s]he likes, but at the same time include education (…) complete freedom (…) we're not in the old days just to stand and tell (…) does what [s]he wants, carries out one's favourite activities (…) I let one wash one's hands, make one's bed, eat independently (…) all rights are ensured, we strive for equal opportunities, like for other children (…) he like cosiness, collects his favourite toys and stays alone, in the place designated for him (…) we try to understand what the child wants from his position, look (…) he participates in music, listens (…) We make sure that [s]he always has what to do (…) if he is engaged in inappropriate activities, I direct him elsewhere in a "nice form" (…) I let him dress himself if he wants to (…).* It should also not be forgotten that the child has the right to respect and dignity as well as free expression (display) of one's wishes.

The informants were also asked about violations of the rights and equal opportunities of these children. PT have singled out only the rights that are sometimes violated, i.e. safety, respect and freedom: *it's impossible to look after him all day long so that the environment or facilities wouldn't cause him any danger (…) so that everyone around would respond respectfully to such children (…) it's not uncommon to hear that this child doesn't belong here (…) if you let one do what [s]he wants, [s] he'll be dragging all day(…) we ask the ergo-therapist to take one out (…) the child is excluded from the celebration (…) I don't invite one to some activities, because he eats playdough for example (…) we used "force", we often had to say: "you go", "go do it", because [s]he didn't do anything by oneself (…) sometimes we don't take one outside, because there are only two of us (…) we sometimes force one to do educational exercises, because [s]he oneself doesn't want to (…) we have to force one to learn (…) we encourage to move, even though one doesn't want to (…) can't keep*

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pace with one outside, doesn't stay within the territory (…) one eats grass, eats dirt, eats tree branches (…).

It can be seen from the data presented in Table 1 that the assurance of equal opportunities for children with ASD to participate in various activities is limited: *a lot of funds are needed (…) inappropriate attitude of people (…) not enough employees (…) little space (…) otherwise restricted, you can't always go out in public (…) a PT assistant is needed (…).* 2 informants indicated that it is possible to ensure equal opportunities for these children, if one wishes to: *the possibilities are great, as there aren't many children in the group (…) can pay enough attention (…) if the educator wishes to, then opportunities are definitely available (…).*

All informants who participated in the research stated that they take preventive measures in order to ensure equal opportunities. The preventive measures of each PT are very different, but the most popular is conversation: *conversations both with children and with parents or institution employees (…) conversations with parents/children (…) we celebrate Autism Day in our institution on the 2nd of April (…) we carry out the "I am Different" campaign (…) we distribute leaflets with various information to parents (…) we only talk (…) we don't allow other children to mock (…) try to explain (…) work with the parents of that child (…) situation management by the educator, getting ahead of things (…) we go to the city library, take part in all kinds of presentations there (…) we also involve these children in cultural activities (…) participate in dances (…) we have sponsors (…).* PT could apply more diverse preventive measures, develop informal activities, thus ensuring social participation of these children.

The summary of the PT responses allows to claim that it is sometimes still difficult for a child with ASD to be admitted to a group where only children with normal development are educated. The reason for this is usually the reluctance and fear of the parents of other children that their offspring will have to study together with a "different" child. The situation is often complicated by the fact that a child with ASD is aggressive/self-aggressive. Most of the time, PT try to ensure equal opportunities of the child to independence, freedom as well as education, but often they do not have these opportunities. The findings of the research reveal that pre-school education institutions lack employees in the groups, where children with ASD are educated. The analysis of the informants' answers allows to claim that equal opportunities for children with ASD in pre-school education institution are limited.

In order to ensure equal opportunities for children with ASD in pre-school education institution, it is crucial to find out what support they need to make this happen. The informants were asked: *"what kind of help do they currently need, what kind of communication method do they choose when communicating with the parents of a child with ASD, and what are the opportunities for inclusive education for these children".* The data are presented in Table 2.

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Table 2. Organization of assistance in a pre-school education institution

Category	Subcategory	Number of statements
Assistance to educators	Physical	5
	Educational	5
	Financial	4
	Psychological	3
Ways of communicating with parents of a child with ASD	Individually	6
	Telephone conversations	3
	Social networks	1
Opportunities for inclusive education	Limited	3
	Ample	3
	Promotion of inclusive education	3
	Selection of special institutions/groups	3

According to the informants' answers, PT most need educational, physical and financial assistance: *in order not to stay in the same place, but to improve in this field (…) when outside, a second person is needed, because it's very difficult when you're alone (…) I make a lot of different tools myself (…) I usually pay the expenses of seminars, conferences myself (…) one person is needed, especially during educational activities and when going outside (…) falls down, doesn't want to go to a group, or cannot "tear one off" from the swing (…) an assistant is needed (…) there is lack of seminars, because there are few of them (…) just try to catch seminars, because they just appear and immediately no more places are left (…) I would like to have more practical seminars (…).*

When speaking about the importance of cooperation with parents, all informants emphasized that it is very important to communicate and cooperate with the child's parents. Informants emphasize that it would be impossible to achieve anything without parents. PT often turn to parents themselves in order to find out what parents do, how they behave in one or another situation at home. Most of the time PT prefer individual and phone conversations: *we usually communicate individually (…) phone conversations (…) individually with everyone (…) we communicate face to face all the time (…) via wired connection (…) I invite them to see how the child behaves in the kindergarten (…) to activities for them to observe (…).*

Research conducted by researchers has shown that educators with a positive approach help children with SEN to successfully enter educational institutions, form positive mutual relationships, educational strategies, and a suitable environment for the inclusion of these children. As claimed by Braslauskienė et al. (2021), all of the following not only reduces the child's disability at the social level, but at the same time expands one's activity area where confidence matures

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not only in oneself, but also in society. Informants' answers allow to conclude that the attitude towards the inclusion of these children is not yet positive, and therefore the inclusion process is not successful. The data presented in Table 2 show that 3 informants claim that it is better for these children to attend special institutions or groups: *while the teacher is busy, [s]he gets into such mischief (…) because it's too hard for the educator (…) because they are given more freedom in special institutions (…) if they don't want to sleep – they may not go to sleep (…) they would have all the conditions for education there (…) for the safety of other children (…) other children are afraid and suffer, because most attention is paid to one (…) if they don't have awareness, one will be better there (…).* There are PT who believe that inclusion should be promoted: *must be educated with children of normal development, because they are not sick (…) special institutions are not necessary (…) children of normal development have to understand that there are also "different" children (…) autistic children learn by examples they see (…) their inappropriate behaviour can be corrected and it will get better over time (…) if the child is stronger, then it's good – one is improving (…).*

The possibilities for inclusion depend very much on the attitude of a person. According to some PT, there are all possibilities for inclusions, all that is needed is wish: *everything depends on the teacher (…) in kindergarten the possibilities for inclusion are much easier than in school, because children accept more easily (…) there will always be possibilities for inclusion, all you need is wish (…) there are possibilities (…).* Others are convinced that possibilities for inclusion are very limited: *parents of other children are very disappointed (…) there's lack of specialists (…) children are cruel, it's very difficult for them to accept (…).*

Having summarized PT answers it can be claimed that educators try to ensure equal opportunities for children with ASD, but the assurance of all opportunities for them is limited, because informants lack educational, physical and financial support.

Data analysis of the opinion of educational support specialists about the features of the implementation of equal opportunities for children with autism spectrum disorder in an educational institution

When discussing the features of ensuring equal opportunities for children, informants were asked: *"were there any difficulties regarding the admission of a child with ASD to the institution? Which equal opportunities of the child are realized and which ones are violated? What are the opportunities and preventive measures to ensure those equal opportunities for them?"* The data are presented in Table 3.

As can be seen from the data presented in Table 3, the child's opportunities are usually already violated when there is reluctance to admit the child to an educational institution.

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Table 3. Features of ensuring equal opportunities in a pre-school education institution

Category	Subcategory	Number of statements
Difficulties	No	3
	Yes	2
Enforceable rights	Safety	5
	Right to education	4
	Right to equality	3
	Independence	3
	Receiving of help	2
Violated rights	Lack of specialists	1
	Exclusion from admission to an educational institution	1
	Bullying/ right to dignity	1
	Rejection	1
	Separation/isolation	1
	Freedom	1
Opportunities	All opportunities	3
	Limited opportunities	2
	Preventive measures	5

According to 2 informants, there were difficulties regarding the admission of the child to a pre-school education institution: *the biggest problem is the lack of preparation of specialists (…) lack of competence of the group educators in teaching these children (…) lack of knowledge about the applied methods and ways (…) specialists often get scared and avoid such learners (…) the director's reluctance to admit the child in the absence of a suitable specialist in the kindergarten (…) depends very much on parents, how they accept this news, if they do not accept the situation, then they blame the institution (…).* 3 informants stated that there were no difficulties: *there were no (…) willingly admit (…) there were no difficulties (…).* The answers of ESS revealed that the difficulties in admitting the child arise not only from the reluctance of other children's parents, as stated by PT, but also from the lack of suitable specialists or the lack of competences of existing specialists and teachers, and the fear of working with these children.

When discussing the opportunities of the child with ASD that are implemented in an educational institution, informants distinguished safety: *safety is ensured (…) safer, because there are fewer children (…) safety from dangers, negative emotions, intolerance is ensured (…).* The right to education: *the right to education, educators and a speech therapist, and a special teacher as well as a movement correction specialist work with one (…).* The right to equality: *the child is not differentiated from others (…) can learn together with other children who don't have SEN (…).*

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Independence: *if [s]he can do something by oneself, then you don't do it for one, let one do it oneself (…).* Getting help: *one is rendered all services provided in the kindergarten (…) we protect one from children (…) we teach children how to deal with autistic children (…) one is provided with intensive help from a speech therapist, additional attention from teachers (…).*

On the basis of the informants' answers, several violations of the non-assurance of equal opportunities were mentioned. ESS distinguished the following cases: lack of specialists: *not enough of specialists when working with these children (…).* Non-acceptance of the child: *transfer of the child to another educational institution by the decision of the director (…) only children with normal development are admitted (…).* Bullying: *the child experiences insults (…).* Rejection: *the child himself is not yet able to make contact, so he is rejected (…).* Separation/isolation: *if the child has some kind of a seizure, then we take him to the washroom until he calms down (…) the nursey takes one out (…).* Freedom: *the child's freedom is slightly restricted (…) one is not allowed to go anywhere, where he wants to (…) when outside one is taught to understand the boundaries and not run anywhere (…) the child likes to crawl under the table and be there, I don't allow that (…).* Even though ESS identified only single cases when equal opportunities of the child are violated, they indicated more violations than PT did.

Informants were asked about the available opportunities in the educational institution to ensure equality for children with ASD. Only three informants emphasized that all opportunities are provided: *the child learns with other children, regardless of the fact that he is diagnosed with autism, he's not singled out from other learners (…) he is treated like other children (…) social teacher takes the child out to work separately (…) I come to groups to observe (…) if the activity causes stress to the child, the teacher's assistant takes him out (…) all opportunities are provided (…) one is allowed to bring one's own food, the teacher warms it up separately if the child doesn't want to eat kindergarten food (…).* 2 informants stated that opportunities are limited: *there's lack of competence (…) attempts to speak to the director didn't yield any results (…) the attitude of the director (…).*

However, all 5 ESS indicated that they apply preventive measures and have all the opportunities to apply them: *education of employees about such children (…) the institution started a project about children with autism syndrome in order to find out as much as possible how to help them (…) education of parents of other children (…) education of those around, for them to be more tolerant (…) team work with PT, PT assistants, music teacher (…) solutions to involve the child and encourage communication with peers (…) we often have conversations with other children (…) we prepare various reports on this topic (…) we organize open table discussions for specialists and educators from our kindergarten community (…) we share best practices (…) we invite specialists from abroad (…) we participate in various projects to get financing (…).* Similar to PT, all ESS apply preventive measures,

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but the preventive measures of specialists are more varied and wider. PT place the greatest emphasis on conversations and explanations, while ESS pay more attention to dissemination of information about this issue, sharing experiences not only within the community circle of the pre-school education institution, but also much more widely, including even foreign specialists.

In order to ensure equal opportunities for children with ASD in the pre-school education institution, it was purposefully clarified what kind of help is needed to make the following happen. ESS were asked: *"what kind of help do they personally need the most? Are there opportunities for child involvement? It was clarified whether it is important to cooperate with the child's parents, and in what ways it should be done?"* Summarized answers of the informants are presented in Table 4.

Table 4. Organization of assistance in a pre-school education institution

Category	Subcategory	Number of statements
Assistance to a specialist	Educational	5
	Financial	4
Communication with the child's parents	Important	5
	Individual conversations	5
	E-mail	1
	Social networks (Facebook)	1
Opportunities for inclusion	Yes	3
	No	2
	Promotion of inclusion	3
	Selection of a special institution/group	2

On the basis of the data in Table 4, it became clear that ESS need educational assistance the most: *educational, it's never too much (…) I'd like not only theoretical subjects, but also practical ones, real situations, analyses (…) additional courses, seminars, conferences (…) to go to seminars, conferences that would contain practical information on how to educate these children (…) courses for specialists (…) open table discussions (…) sharing of best practices (…).* In addition, financial assistance: *there's a lot of new, good tools, educational games for autistic children, but all of them are not cheap (…) lack of funds (…) to acquire more diverse educational materials (…).*

According to Ruškus (2002), partnership relations between parents of a disabled child and specialists can not only help to understand each other, but also to break down the walls of psychological detachment and social self-isolation of both specialists and parents. We must understand that parents, first of all, want to be understood. The research revealed that ESS also agree with the following, because all informants emphasized that communication and cooperation with the parents of the child are extremely important: *of course it's important (…) working*

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cohesively, continuously with these children is very important (…) it's very important to involve the parents (…)together we get to know the child faster (…) it's very important (…) we share advice (…) it's one of the most important elements of a child's education (…) communication with parents and applying the same methods at home and in an educational institution allow to achieve comprehensive education of the child (…) I can't imagine full and productive work without parents (…). Most of the times informants, similar to PT, apply individual conversations: *we communicate individually, at an agreed time (…) conversations with parents (…) we always discuss how things are going and give homework (…) we get a lot of advice from parents (…) there are constant conversations (…) an individual conversation, consultation are the best (…)*.

Currently, a lot of attention is paid to the inclusion of children with SEN. The scientific literature claims that inclusion is important and benefits not only the child with ASD, but also those around one. ESS were asked: *"if they support inclusion and what opportunities are there for it in their educational institution?"* 3 informants indicated that there are opportunities: *there are opportunities, but they depend on people (…) if people are ready for it, there should be no problems (…) full inclusion (…) learn together with peers with no SEN (…)*. 2 informants said that there are absolutely no opportunities for inclusion in their pre-school education institutions: *there are specialists who are against the inclusion of these children (…) there's no wish for inclusion (…)*. It can be seen from the ESS statements that there are opportunities for inclusion, but they depend on the will of people. If people are in favour of the inclusion of these children, then it is not difficult to do so and the inclusion itself becomes successful, but if ESS are against the inclusion of these children, then the whole process of inclusion becomes very difficult. Therefore, ESS were asked: *"what is their opinion about inclusion? Are they for or against it?"*

3 informants spoke in favour of promoting inclusion: *such children should no longer surprise others, they are like other children (…) there's no need to be afraid of them (…)it's better when such children are brought up with children of normal development (…) a good example, the natural behaviour of children, it's good for them (…) the child will integrate into society much faster (…) will observe the behaviour, communication of other children, it's to one's benefit (…) I don't agree that they should attend special institutions (…) it's necessary to decide according to the need, situation, because each case is different and individual (…)*. 2 informants claimed that children with ASD should attend special institutions: *only in favour of special institutions (…) they are better off there (…) they are guaranteed better conditions there (…)it's easier for the specialist (…) they would better feel the full-day regime there (…) there are often celebrations, projects in a regular kindergarten, and autistic children are afraid to change the environment (…) specialists go into more detail there (…) they learn in an adapted institution (…)*.

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Having summarized ESS answers, it can be stated that they manage to ensure more equal opportunities for the child compared to PT, because they work with the child individually, and, accordingly, have more opportunities. Though, not all equal opportunities of children with ASD are ensured, because ESS lack educational support. Moreover, some specialists are against the inclusion of these children, thus their equal opportunities cannot be fully ensured.

Discussion

The features of the implementation of equal opportunities for children with ASD in a pre-school education institution are relevant as well as a field of research with theoretical and practical significance. Jokubaitienė et al. (2019), reviewing the activities of the Lithuanian Autism Association *Lietaus vaikai* (*Rain Children),* singled out the main problems that need to be solved in Lithuania when it comes to providing support to children with ASD:

1) early diagnosis is not ensured;
2) necessary therapy is not applied, there is lack of unified medical services;
3) inflexible, non-inclusive education system for SEN children.

Pre-school education institutions are unable to ensure equal opportunities for children with ASD.

One of the conditions of successful inclusive education is a positive public attitude towards the education of children with SEN. Inclusive education affects many groups of people: educators, heads of the school, parents of children, children themselves and others. The results of the study conducted by Jankevičienė (2013) revealed that future teachers generally (67%) support the concept of inclusive education of children with SEN, a quarter (25%) did not have an opinion on the matter. The qualitative study carried out by the authors of the article revealed that the attitude towards the inclusion of these children is not yet completely positive, and therefore, the inclusion process is not successful. A considerable number of informants said that it is better for these children to attend special institutions or groups, while the other part of informants claimed that there are all opportunities for inclusion, all that is needed is wish. It all depends on the teacher, how one will accept the child.

Research carried out by Ibrahimagic et al. (2015) revealed that inappropriate education of children with ASD occurs due to the attitude of people, as they do not believe that positive changes in these children are possible; due to inadequate teaching that does not correspond to the latest knowledge, and due to lack of funds. The following is also confirmed by the qualitative research, when informants indicated that the negative attitude (of parents, administration) towards these children still remains. PT and ESS stated that they lack knowledge and especially practical training in working with these children, there are not enough

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seminars. Moreover, both educators and ESS lack funds to ensure equal opportunities for these children in the pre-school education institution.

After carrying out the empirical study, some problems and limitations emerged. The sample size was small, 6 and 5 informants, thus the findings of the research are only intended to fulfil the purpose of this research. One of the limitations is the difficult recording of answers, because not all informants agreed to have their statements recorded on a dictaphone. The refusal was influenced by their previous negative experiences of participating in research. Another limitation is the lack of time, two informants had time for the interview only during their lunch breaks; thus, time for the interview was limited and took place in a hurry.

Recommendations for further research: in order to obtain more detailed information about the features of ensuring equal opportunities for children with ASD in a pre-school education institution, it would be appropriate to interview children's parents and the administrative staff of the pre-school education institution. An action plan for the implementation of inclusive education has been prepared on the basis of inclusive education; thus, it would be significant to select a larger and more diverse sample of informants/respondents and interview them about ensuring equal opportunities for children with ASD in pre-school education institution.

Possibilities of using research findings in practice: in Lithuania, more and more attention is being paid to the early education and ensuring equal opportunities for children with ASD, therefore the application of the obtained findings could be a preventive measure, when taking into account which opportunities of the children are most often violated and what opportunities are available in order to avoid those violations.

Conclusions

According to pre-school teachers, ensuring equal opportunities for children with ASD is limited. Educators distinguish the following features: there is no possibility to ensure that the child is 100% safe in the pre-school education institution, because they work in groups alone, with no assistants; the groups are not fully adapted to these children, thus PT are often forced to restrict the freedom and opportunities of these children; PT are not able to control the ridicule of other children and adults, to change the established negative attitude, and to ensure the respect of all those around them. However, children with ASD are provided with the following opportunities: individual education; educators produce suitable and safe educational tools for them; create a separate space in the group, where the child can feel safe and calm; actively and willingly communicate and cooperate with the child's parents, thus ensuring more effective education, involve the child in social activities (cultural activities, dances, excursions).

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In the opinion of educational support specialists, features of the implementation of equal opportunities for children with ASD in the pre-school education institution are as follows: specialists work with children individually, the child receives all the necessary help (of a special educator, speech therapist, physiotherapist, psychologist); the environment, where the child is being educated, is safe and adapted, ESS apply safe and appropriate tools in the education of children; preventive measures are implemented, thus there are no difficulties regarding the child's admission to an educational institution. Nonetheless, equal opportunities of these children are limited by: lack of appropriate means; unpreparedness of ESS (lack of knowledge, competence and experience to work with these children); educational and financial support is needed.

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Inclusive Pre-School Education in Latvia: Problems and Solutions

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ABSTRACT

Cabinet Regulations No. 556 of November 19, 2019 titled 'On Education Development Guidelines 2021–2027' state the importance of targeted support measures for ensuring inclusive education in Latvian educational institutions. However, the evidence in pre-schools indicates an insufficient understanding and interest in using these support measures to find solutions to the challenges of inclusive education. This empirical study investigates the problems in carrying out evaluations of children with special needs, establishing an individual plan and receiving support measures, and it also explores pedagogical solutions to these problems. Thanks to the European Social Fund (ESF) Project No. 9.2.1.3/16/I/001 'Improving the support system for children with communication difficulties, behavioural disorders and domestic violence', teachers are now able to receive qualified specialist support on how to cooperate with parents or legal guardians and how to organise the pedagogical process. The aim of this research is to assess teachers' awareness of what is stipulated in regulatory enactments for ensuring inclusive education, the challenges to inclusive education and the available solutions. Literature analysis, teachers' surveys, an analysis of student behaviour in pre-schools and pedagogical documentation are used. The research results reflect the level of awareness among teachers of the education guidelines, the content of regulatory enactments and the willingness of teachers to accept diversity, seek support measures and cooperate with parents or legal guardians to ensure an education that is appropriate to each child's abilities.

Keywords: inclusive education, individual plan, pre-school age child, special needs, support measures

Introduction

The first paragraph of Section 53 of the General Education Law in Latvia states that students with special needs may be enrolled in general education programmes. Requirements of general education institutions admitting students with special needs in their general education programmes are specified by the Cabinet of Ministers (Vispārējās izglītības likums, 1999). Paragraph 7 of Cabinet Regulations No. 556, adopted on 19 November 2019, 'Requirements for General Education Institutions to Admit Students with Special Needs in their Educational Programs' specifies that the head of the education institution must approve the procedures for determining the needs of students with special needs as well as developing and implementing the plan. They must also specify the tasks and responsibilities of each person involved in the plan and identify the pedagogue responsible for overseeing the process of implementation (Prasības vispārējās izglītības iestādēm, lai to īstenotajās izglītības programmās uzņemtu izglītojamos ar speciālām vajadzībām, 2019).

Since 1 September 2020, when these provisions came into force, each general education institution has been required to have internal regulations, which specify the activities of the institution, prepared to show compliance with the Cabinet Regulations. However, two academic years is a short period for all general education employees to gain sufficient experience in implementing inclusive education. Solidary with parents and the local community is required for inclusive education to be a success. By implementing inclusive education, general education institutions, including pre-schools, are now admitting students who previously attended special education institutions or special education classes. Some of these students have behavioural issues and support for school employees is required. To provide this support as well as offer help to the legal guardians of these children, the European Social Fund (ESF) project No. 9.2.1.3/16/I/001 'Support systems development for children with communication difficulties, behavioural disorders and domestic violence' has been launched to host various events that offer professional advice from specialists. This project is implemented by the State Inspectorate for Protection of Children's Rights and includes a support team of various specialists.

Literature Review

As Dukes and Smith (2006) have emphasised, 'society is becoming more diverse and our Pre-school settings are beginning to reflect this' (p. 1). Pre-school settings in Latvia reflect a large diversity of children with different developmental needs and it is necessary to find support measures for teachers to enable them to cope with the variety of difficulties they face in their professional life (Šūmane et al., 2019). The results of previous research indicate a need to provide as broad access as possible to pedagogical professional development programmes in special

(inclusive) education to strengthen the professional competence of pedagogues. According to Paseka and Schwab (2019), teachers in inclusive settings 'have to reflect [on] their teaching practice and the constraints they usually experience by using parents as critical friends to get an external perspective on their endeavours to meet the needs of their students' (p. 269). The parents' role is critical to the success of any educational efforts and it is one of the main considerations in the implementation of successful inclusion of young children with special needs. Parents who are involved in pre-school activities and familiar with the daily routine of the institution are a boon to inclusive education because their participation promotes belonging (Karlsudd, 2022).

According to Black-Hawkins (2017), inclusive education is creating a shift in the way teachers think about education. Her findings are important for research on the implementation of inclusive education in pre-school settings because they suggest a reversal in the usual approach that has been taken. As she writes, inclusive education implies a move 'away from a traditional, or individualised, approach to learner diversity that starts by making provision for most learners, and then offers something additional or different for some learners identified as having particular needs' (Black-Hawkins, 2017, p.13). To make this move, mutual interactions with other teachers and their assistants is required. The assistant's role is particularly important in providing support for children with special needs and emphasized by Finland's approach to inclusive education (Mäensivu et al., 2012). In Latvia, the inclusion of children with different special educational needs is a problem as pre-schools lack sufficient staff members and teachers do not always receive the necessary support they need to deal with issues that arise in the group.

Methodology

The aim of this study is to investigate the problems in implementing inclusive education in Latvia at the pre-school level and to find solutions to these problems. Ultimately, the goal is to assist teachers in carrying out an evaluation of children's special needs, establishing an individual plan and receiving support measures. The research tasks are as follows:
1. To explore the main difficulties of including children with special needs in a general education programme and explore mitigation possibilities.
2. To survey pre-school education pedagogues regarding their experience in implementing inclusive education and support measures and to explore parents' understanding of their child's interactions and interests to gain information about the special needs of the child.
3. To analyse the support measures for inclusive education and the recommendations provided.

The cooperation of the preschool education institution of Riga municipality was sought to obtain research data. This institution was selected since it has a typical distribution of employee position units. Compared to other municipal institutions, the number of employees and parents of children in the selected preschool educational institution is among the largest, allowing for broad insight into the specific problems this research investigates. In this preschool educational institution, a general education curriculum is implemented. All children enrolled in the institution participate in this program, including those with special needs. To gain insight into the current situation regarding the inclusion of children with special needs in a general educational institution, teachers of the specific institution and parents whose children attend this institution were invited to participate in the survey. Educators were offered a questionnaire in paper format with open-ended and closed-ended questions, whereas parents were given the questionnaire in electronic format. Individual semi-structured interviews were carried out in a separate room at a previously agreed upon a meeting time. In total, 35 preschool teachers, 113 parents of children and 6 parents of children with special needs completed questionnaires and participated in individual interviews.

This study also interviewed experts on the problems and solutions of inclusive education. The cooperation of the preschool education institution with inclusive education experts was ensured under the European Social Fund (ESF) project. Experts from the project included a psychologist, family psychotherapist, social worker and special pedagogue.

Results

Understanding the feasibility of inclusive education and the developmental possibilities of children with special needs is of crucial importance in many countries. As Terzi (2010) has indicated, the question of what constitutes a fair provision for students with special needs is extremely controversial in almost all developed countries. Cabinet Regulations No. 453 'Methodology for Evaluating the Special Needs of Students in Pre-school Education Institutions' (Izglītojamo speciālo vajadzību izvērtēšanas metodika pirmsskolas izglītības iestādēs, 2021), adopted on 29 June 2021, specifies the methodology for evaluating the special needs of students in pre-school education institutions. Although this methodology came into force on 1 September 2021, 37% of the pedagogues included in this survey indicated that they were only partially informed about the evaluation of special needs and the necessity to implement inclusive education. These results indicate that the institution needs to establish a support team that would explain the purpose of inclusive education, which is to ensure an opportunity for every child to obtain a quality education. The need for this team is consistent with the data on the qualifications of teachers in the preschool educational institution.

Many teachers in this study mentioned that they have no education in this area. Only 3 out of 35 teachers had training in special education or speech therapy (either at a bachelor's or master's level), and only 1 out of 35 teachers had completed a 72-hour training course in special education. When answering the question 'how often do you receive information about your child's academic achievements', 46% of parents stated that they receive information at least once a week, 32% 1–3 times a month, 12% 1–5 times every six months and 9% once year.

The task of the head of the institution is to ensure educational activities for employees and parents regarding the implementation of inclusive education and to make joint decisions on further actions. One solution is to receive precise, professional information, which entails participation in the ESF project. For this research, it was important to understand the opinion of teachers on how they evaluate the opportunity to receive support from specialists in inclusive education. Thus, we asked teachers the following question: 'Do you agree with the statement that by participating in project work, it is possible to receive expert advice and a program of support measures? Figure 1 below shows their responses.
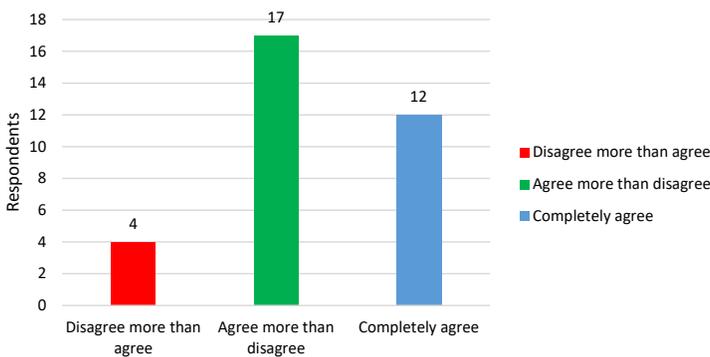
Figure 1. Do you Agree That Expert Advice and Support Measures are Obtainable by Participating in Project Work?

Results of the survey showed that that the vast majority teachers were in agreement or partial agreement with the statement that participating in the project brought them benefits. During the interviews, however, we found that teachers did not so much wish to receive advice or information regarding possible support measures from the project specialists as they wanted an assistant for a child with special needs. It is possible that the perceived need for an assistant was the reason that 6 teachers disagreed or expressed more disagreement than agreement with the statement.

The cooperation of the parents is vital to the implementation of inclusive education, and for this reason it is the task of institutions' employees to provide information, offer advice and observe confidentiality with respect to all information given and acquired. This study asked teachers about their interactions with the parents or legal guardians of students and their ability to communicate to them the importance of inclusive education. Figure 2 below shows their responses to the question 'Have you been successful in communicating to all the parents of the group the importance of inclusive education and the need for their children to gain relationship experience?'
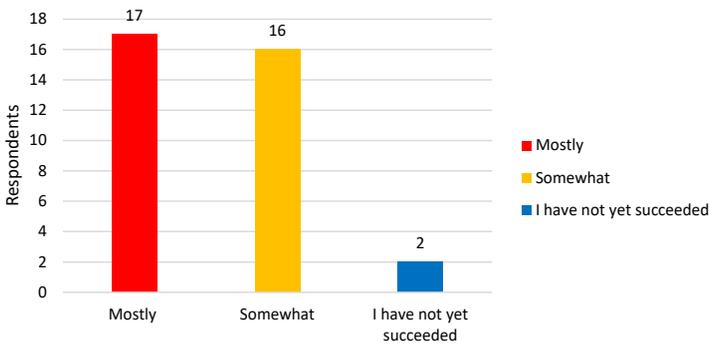
Figure 2. Have You Been Successful in Communicating the Importance of Inclusive Education to Parents?

As Figure shows, 17 teachers had sufficiently good communication with parents and almost the same number of respondents (16 teachers) had some communication. Only 2 respondents acknowledged that they had insufficient interactions with parents and had not yet been able to communicate to them the importance of inclusive education.

Analysing the documentation of the specific pre-school education institution, we found that when assembling groups of students, it is preferable to include no more than one or two students with special needs to ensure an individualised approach. An important task of pedagogues is to observe children. Observations are especially important when implementing inclusive education. In their discussions with experts, teachers comment on the results of observations and aim to determine the best solutions. Typically, most difficulties in creating educational groups arise with the inclusion of newly accepted children. Although the legal guardians of all newly accepted children are asked to provide as much information as possible about their child, the information may not be adequate for educational purposes. This study carried out a survey of 113 students' parents/legal guardians and found that the information they provided was more useful

for developing strategies to mitigate adaptation or behavioural problems than for understanding the special needs of the child, which were quite often undiagnosed.

Taking into account that the development of individual plans for a child with special needs has been implemented only since 1 September 2021, we asked teachers whether they agree with the statement that the development of these plans is the primary pedagogical challenge. The results are shown in Figure 3.
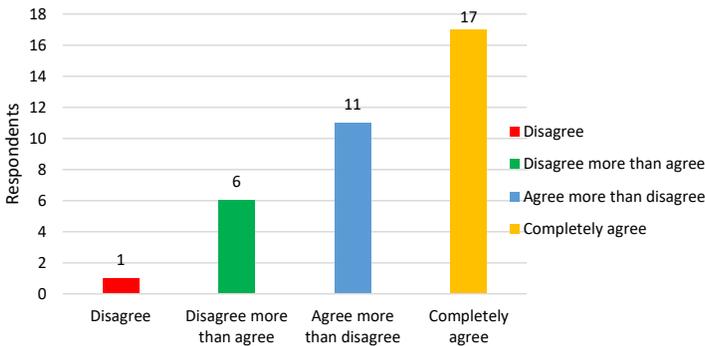
Figure 3. Do You Agree That the Development of Plans is the Primary Pedagogical Challenge?

According to the responses, the majority of teachers agreed or mostly agreed that the development of plans was the primary pedagogical challenge, and only 1 teacher completely disagreed with this statement. We conclude that knowledge obtained through courses, expert advice, or project participation may be helpful in solving this problem.

An individual plan is to be jointly evaluated by the student, student's parents/legal guardians and pedagogues involved in the implementation of the plan not less than twice during the academic year, and written minutes are to be kept. However, it does not appear that these procedures are always followed. Results from the survey showed that in most cases, these discussions take place infrequently or not at all, and only one teacher indicated that they take place regularly (see Figure 4). Thus, slightly less than one third of pedagogues carry out discussions with parents/legal guardians regarding the development of an individual plan for their child. The COVID-19 restriction measures might possibly explain these findings. During the period of lockdown, parents were not permitted to be present on the school premises; thus discussions could only take place outside the school, which was inconvenient for both parties. The use of technologies in the provision of information may have also been a contributing factor. The 'e-klase' communication method is currently being used, but in previous years it was not used. Instead, other technological communication methods were implemented

that did not have the convenience of the e-klase method. Unfortunately, not all pedagogues have good digital skills; therefore, the development of courses in pedagogy and technical skills are currently underway for upcoming years.
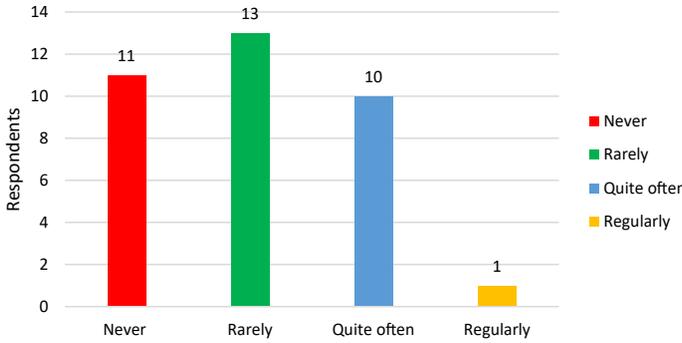
Figure 4. How Often Do You Recommend Parents Practices to be Implemented?

Within the scope of the ESF project, specialists from the State Inspectorate for Protection of Children's Rights in cooperation with the pre-school stressed that the peer environment of the group has an impact on the outcomes of inclusive education; therefore, during consultations with group staff, information was provided not only about the behaviour, interests and skills of a child with special needs, but also about other children in the group. To reflect the importance of the group setting, we asked teachers about relationships between children . The question was whether the children in their classroom willingly participated and cooperated in daily activities together with children who have communication difficulties. The results are shown in Figure 5 below.
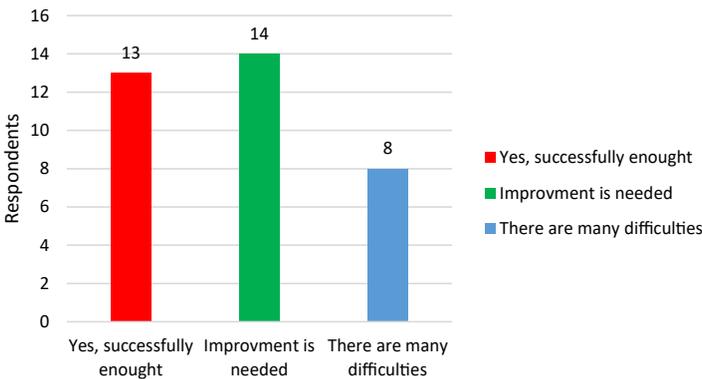
Figure 5. Do the Children in Your Classroom Willingly Participate in Daily Activities Together With Children Who Have Communication Difficulties?

Obtained results demonstrate that 13 teachers have a successful experience with children in groups, whereas 14 indicated that improvement is needed and 8 acknowledged many difficulties in this regard. In individual semi-structed interviews with teachers, we found that teachers support the implementation of inclusive education and made efforts to facilitate it.

Discussion

In most developed countries, special education has been 'extended in scope' and is now 'the concern of all schools, teachers and professionals working with children rather than the separate domain of a limited number of specialists' (Jones, 2004, p. 6). This is also the case in Latvian pre-schools, where team-work is encouraged in the implementation of inclusive education. For this reason, it is essential for pre-school teachers to have a support system in place that includes experts involved in the ESF project.

To facilitate one-on-one discussions with parents/legal guardians of the 6 students with special needs in this study, we analysed the ESF project recommendations in Regulation No. 9.2.1.3/16/I/001 'Support systems development for children with communication difficulties, behavioural disorders and domestic violence'. These recommendations have been formulated by experts who include a psychologist, family psychotherapist, social worker, and special pedagogue. They are summarised below:

- Continue to provide necessary support for children in accordance with their individual needs and the competencies of the institution's specialists.
- Expand the support team and organise support team meetings to identify current problem situations, put forward goals and tasks, determine responsible persons for individual situations, establish individual education/ behaviour support plans, plan meetings with parents and support institutions (for example, social services), and present the current difficulties and progress of the child's development.
- During work with children, implement realistic tasks that can be measured within a particular time frame. Develop these tasks together with their parents and specialists.
- Continue to perform pedagogical observations and use them to carry out evaluations of the special needs of students.
- In work with groups, use social and emotional learning to help children in the group understand their emotions as well as those of others.
- Continue educational training (and educate children's parents and colleagues) on how to solve difficulties with children, including how to correct undesirable behaviour.

- Promote self-guided learning, which is an important skill for children to develop to be able to maximise their abilities. Self-guided learning reveals areas of difficulty and interest, and at the same time helps the child learn to plan and organise their activities.
- Continue working with parents/legal guardians, encouraging and motivating them to seek additional support at the educational facility and elsewhere.

Clarifying comments by experts on these recommendations were provided for teachers the implementation of these tasks. For example, when suggesting that parents visit a specialist with their child, it is important to explain the justification and aim of the recommendation. The recommendation to make an appointment with a psychologist, for example, might be given in relation to specific observational signs of neurodevelopmental disorder or other difficulties. Equally important is being able to answer parents' questions about the nature of the particular specialist's work, for example, whether the specialist is a pedagogue, speech therapist, psychologist or other professional.

More detailed explanations by experts were also provided for teachers. Example, during a remote consultation it was stated that there are students in the group whose skills, abilities and knowledge are not commensurate with those of other children in the same age group. An earlier diagnosis and provision of targeted support might have been utilised to enhance the skill development of these students. We conclude that the pedagogue's observations and early cooperation with parents, administration and support staff specialists are vital in providing special needs children with the necessary support.

Dukes and Smith (2007) highlight the importance of communication with parents in the educational process:

> *The more you get to know a parent the more you are able to understand the things they may say or do and vice versa. Many misunderstandings can be avoided by taking a little time to think about and appreciate a parent's perspective'.* (p. 62)

The willingness of pedagogues to understand the situation and perspective of parents can be very helpful in communicating with them for the purpose of obtaining support for children in inclusive education. Research shows that cooperation between professionals and parents is crucial for children with special needs (Roffey, 2005). However, finding the best way to obtain this cooperation can be challenging, as Baldock (2011) writes: 'As a society we remain fundamentally uncertain where to draw the boundaries and lines of connection between the family, the community and the state when it comes to the welfare of young children' (p. 133).

The implementers of ESF project, the Advisory Unit of the State Inspectorate for Protection of Children's Rights, explains that the programme is developed based on information provided by the education institution. It includes a support programme with an implementation plan and detailed recommendations for each party. The 'Implementation plan of the support programme' includes tasks that require implementation within the next 3 months. In case of any questions or uncertainties, it is recommended that persons contact the Advisory Unit specialists. 'Recommendations for the implementation of the support programme' are included in an attachment to the support programme and intended to be implemented after the programme has commenced.

The ESF project approach to pre-school education appears to be very useful in reaching the goals of inclusive education. As Beneke et al. (2018) writes, different educational projects are helpful in achieving 'the goal of engaging each and every child' because they allow teachers to choose a topic of 'high interest to their particular group of students and they facilitate an in-depth study of the topic through firsthand investigation and research' (p. 13). In order to evaluate the usefulness of the recommendations provided by the ESF project, specialists of the Advisory Unit carry out an electronic survey for support providers within 6 months after the development of the support programme to obtain information about the results of cooperation with experts and parents of children in the programme.

Conclusions

This study investigated the level of implementation and perceived effectiveness among Latvian preschool teachers of recommendations provided by the ESF Project No. 9.2.1.3/16/I/001 'Improving the support system for children with communication difficulties, behavioural disorders and domestic violence'. Empirical data based on questionnaires and interviews were obtained from 35 teachers in the preschool education institution of Riga municipality as well as 113 parents of children and 6 parents of children with special needs. The following conclusions can be drawn:

1. In Latvia, a gradual transition to inclusive education whereby children with special needs are being admitted into general education programmes is being implemented in accordance with the documents of education policy and regulations of education institutions, as well as the wishes of parents of children with special needs.

2. Although pre-school educators are informed about the documents of education policy and the content of institutional regulations, they lack of knowledge, support measures and accumulated work experience to implement these requirements.

3. The Advisory Unit of the State Inspectorate for Protection of Children's Rights provides the institution participating in the project with support measures for the implementation of inclusive education, specific recommendations and an opportunity to receive answers to problematic questions related to daily pedagogical work.

4. Results of an empirical study indicate that less than one third of pedagogues communicate with the parents/legal guardians of the child regarding the development of an individual plan. This situation needs to improve. Provision of support measures also needs improvement. Difficulties often arise due to insufficient understanding and support from parents of other students, making it necessary to be proactive in gaining civic support for inclusive education from individuals within the community.

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Multisensory Approach in Speech Therapy for Preschool Children

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ABSTRACT

The paper is devoted to topical issue – multisensory approach in speech therapy. The aim of the paper is to substantiate the neccessity of multisensory approach in speech therapy sessions for pre-schoolers. The number of children with speech and language disorders is increasing every year and help is needed to alleviate the disorders. Children with developmental language disorder (DLD) have to work hard to overcome developmental difficulties. They have common features because of language problems, nevertheless they are so different in their learning styles, individual and personal characteristics, and the severity of their speech and language disorder.

Speech therapist has to be creative and find the way to each child alongside the strict methodology, and promote their development.

Multisensory approach in the essence is the use of all senses in the learning process and intervention. Speech therapists know how important it is to attach the attention and keep interest of a child to achieve the best results. Some senses are more accustomed in daily use; others are used only in special cases. The development in pre-school age is the basis for the future life, wellbeing and success. Therefore the fundamental must be strong, confident and reliable.

Used methods: literature review based on specific key words in Google Scholar, questionnaire for speech therapists and statistical analysis of the obtained results.

Main results specify frequently used senses (vision, hearing, touch) and more rarely used senses (smell and taste). Nevertheless the results of speech therapy intervention suggests more frequent use of all the senses. One of the conclusions is related to the need in the education of future speech therapists to pay more attention to the use of a multisensory approach in daily sessions for children with speech and language disorders.

Keywords: developmental language disorder, intervention, multisensory approach, preschool children, speech therapy

Introduction

The study was conducted to develop theoretical principles on the use of a multisensory approach in speech therapy sessions for preschool children with developmental language disorder. An initial empirical study was also conducted, the results of which are described in the results section.

Developmental Language Disorder (DLD) is a comparatively new term in speech therapy, created in 2017 instead of the previous term Specific Language Impairment (SLI). This was done in order to use common terminology and clearly show the essence that these are children with primary speech and language disorders in the developmental process (Bishop et al., 2017). It also makes it easier for researchers to understand the signs of the disorder, and several studies have been devoted to this very concept. Latvia has also been involved in them and contributed by comparing different approaches in Europe (Tubele & Daniela, 2019). An accurate explanation of the disorder also provides for common principles in the choice of intervention, correcting the pronunciation of sounds in preschool children, developing phonematic perception, clarifying and enriching the vocabulary, as well as improving communication skills. It envisages the use of various methods, including a multisensory approach in speech therapy.

The simultaneous stimulation of two or more of the sensory receptors is considered a multisensory approach (Neumann et al., 2012). Early childhood educators emphasize that young children learn through all their senses. This is how they get to know the world, learn the language and prepare for the learning process (Jeyabalan et al., 2017; Maxheimer, 2013; Neumann et al., 2012; Wilkinson et al., 2022). Sensory stimuli enter the child's brain and this strengthens neural pathways, which will be important for any type of learning. Research on multisensory integration and child neurodevelopment is essential here (Dionne-Dostic et al., 2015). It is believed that the child's neurodevelopment is fragile, vulnerable and at the same time has great opportunities for development. Neuropsychological and neuroimaging studies show that multisensory interactions are widespread in the cortex. In a child's everyday life, there are countless multisensory experiences deriving from a combination of information acquired through several sensory modalities (Dionne-Dostic et al., 2015). This multisensory information is processed and integrated in the child's brain, providing an appropriate and complete picture of what is perceived. Here, the idea that early intervention involving as many senses as possible is essential and necessary is emphasized once again (Dionne-Dostic et al., 2015; Kucirkova & Kamola, 2022; Mason, Goldstein & Schwade, 2019; Neumann et al., 2012). Some articles emphasize the use of a multisensory approach for preschool children and the promotion of phonemic perception skills (Jeyabalan et al., 2017). Despite the study being conducted in Malaysia, the insights and data obtained are also relevant in the context of this study.

The multisensory approach is considered in many different contexts, but there are also several common features. In teaching hard-of-hearing and deaf children, the main focus is on the fact that sign language is used in these children's families, that significantly affects language competence. The use of a multisensory approach significantly reduces delayed language skills, hard-of-hearing and deaf children bevefit from this approach (Hettiarachchi, Ranaweera & Disanayake, 2021). Saratikjan talks about shy children and children with autism spectrum disorders. In order to more accurately diagnose communication skills and ensure an effective intervention process, it is necessary to use a multisensory approach (Saratikyan, 2021). Rompas and Recard recommend creating an intervention that uses different strategies that enable language comprehension. Thus, multisensory activities stimulate the child's involvement in the process of language acquisition (Rompas & Recard, 2021). There are also studies on the effects of multisensory environments on children with autism spectrum disorders (Unwin et al., 2022). These rooms prepare children with autistic spectrum disorders for the learning process by increasing attention, reducing repetitive motor behavior, anxiety. There is a study specifically on the implementation of a multisensory approach in improving articulation and the use of various methods and their combinations. It is emphasized that besides traditional phonemic perception and articulation exercises, Tactile-kinesthetic techniques, Moto-kinesthetic speech training, Hand signal system, Cued speech, Visual phonics and others are also used (Maxheimer, 2013). The author mentioned Sound Strategies for Sound production which is a multisensory approach based on current phonological and motor training practices where auditory sequencing skills are developed. This method in multisensory approach includes also use of a written singal, that means – visual component is included. Multisensory stimulation is important because it is used to teach pronunciation of sounds. Auditory discrimination, visual recognition, cognitive understanding and kinesthetic awareness are developed (Maxheimer, 2013). If we are talking about where the vocabulary is enriched and with other areas of activity in speech therapy, then the involvement of all senses is essential.

Several authors believe that multisensory learning should be viewed much more broadly than just using the five senses. There are studies that confirm that as many as 22 senses are known (Kucirkova & Kamola, 2022). Multisensory learning can be used in the process of learning mathematics (Cuturi et al., 2021), in learning English (Hettiarachchi, Walisundara & Ranaweera, 2020). A study on the use of a multisensory approach in learning English includes audio, visual, tactile and physical movement input (Rompas & Recard, 2021). In the course of research, authors came to the conclusion that using not only vision but also other sensory modalities, the result is better and more durable. Multi-sensory interaction has given good results proving the effectiveness of the multi-sensory approach. The importance of developing multisensory experiences is to

move beyond the visual. Nevertheless it is challenging for teachers, requiring more effort and also knowledge. It is incomparably more difficult for children with pre-existing disorders to acquire language and speech, especially if the surrounding environment is noisy. If children have various sensory processing disorders, then the main principle is to think about incoming sensory inputs to make sure that they are functioning accordingly (Foxe et al., 2020). For a long time it was believed that children with sensory processing deficits should only stimulate one sense in order not to overload the system. However, recent studies (Foxe et al., 2020) show that this is not the case and that using a combined audiovisual stimulus, language acquisition is more successful. Gascoyne also talk about vulnerable children who have behavioral and emotional disorders. They are offered various materials in the form of toys to use all their senses as much as possible. Gascoyne emphasizes that sensory stimulation is the most important way children can learn about themselves and the world around them. Using multisensory tools for engaging children in learning will benefit and enrich children's ability to mastery in mainstream education (Gascoyne, 2017). It will help also in acquiring language and early literacy. In relation to literacy and language skills active learning through multisensory experience is more effective. They also emphasize that at an early age hearing and vision interact during the speech perception (Neumann et al., 2012). A multisensory approach may be used during speech therapy sessions when children explore letters, objects through multisensory activities. Multisensory methods could be used also in the home settings, then parents should be involved in the work. Interesting experience is presented about sensory food education programme "Flavour School", where there are opportunities to get to know fruits and vegetables, learn their names not only by looking, but also by smelling and tasting (Wilkinson et al., 2022). In speech therapy, it can be successfully used to enrich the vocabulary.

The process of teaching and learning of preschool children is traditionally carried out through sight and hearing. When learning a language, children should feel comfortable and happy to be part of the process when learning letters. Learning based on basic neurodevelopmental knowledge would require multisensory approach. Multisensory approach to learning is the continual use of the five senses, including the use of body movement to teach abstract concepts making them concrete and accessible for memory usage and transference (Wrighton, 2010). Using several modalities at one time to strengthen neural pathways.

Methodology

The theoretical method used was literature review. There was only one relevant article in the Scopus database that was included in this literature review. It was dated 2022, and it corresponded to the chosen keywords. The research

profile in the Web-of-Science database did not match the selected one, so other articles were analyzed using the Google Scholar website. The Google Scholar website was searched by key words: multisensory approach, preschool children, speech therapy sessions also limiting the research years (2021-2022). There were only a couple of specifically relevant articles, so the search was slightly expanded by excluding speech therapy sessions or by changing preschool age to school age.

The empirical part used a survey for speech therapists. The sample of respondents is random, nevertheless all of them are speech therapists. The questionnaire was posted on the Facebook profile of speech therapists' followers and an Idea exchange point for speech therapists. The questionnaire was anonymous and answers were recorded in a google form. There were a total of 161 responses.

Results

Theoretical findings are related to clarify the understanding of the multisensory approach and the possibilities of its use for preschool children with speech and language disorders in speech therapy sessions. By clarifying the obtained information, theoretical knowledge about several aspects was obtained.

Empirical part was carried out using survey for speech therapists. The study was conducted to find out how Latvian speech therapists understand and use the multisensory approach in daily speech therapy sessions with preschool children. There were eight questions to find out general trends in the use of multisensory approach in Latvia. The first question is related to the length of professional activity in speech therapy. Up to one year is 13% respondents; one to five years – 1.1%; five to ten years – 44.7%; ten to twenty years – 26.7%; more than 20 years – 15.5%. This means that there are numerically fewer speech therapists who have been working for one to five years but mostly those whose work experience is between five and ten years. There are also many specialists (15.5%) who are working in the profession for more than twenty years. The second question was asked in order to roughly understand whether speech therapists know what a multisensory approach is. Just over half (51.6%) say they know what a multisensory approach is; surprisingly, 41% of respondents admit that they know only approximately and 7.4% believe that they have no knowledge, which is a multisensory approach.

The next question was about the use of all senses in speech therapy classes where there was an opportunity to choose several options (see Figure 1).

It is clear that almost all speech therapists use vision, hearing and touch nevertheless there are slight differences. 160 or 99.38% of respondents use vision; 159 or 98,76% use hearing, and 156 or 96.89% of respondents use touch. This happens because speech therapy classes include exercises and tasks that not only develop visual and auditory perception.
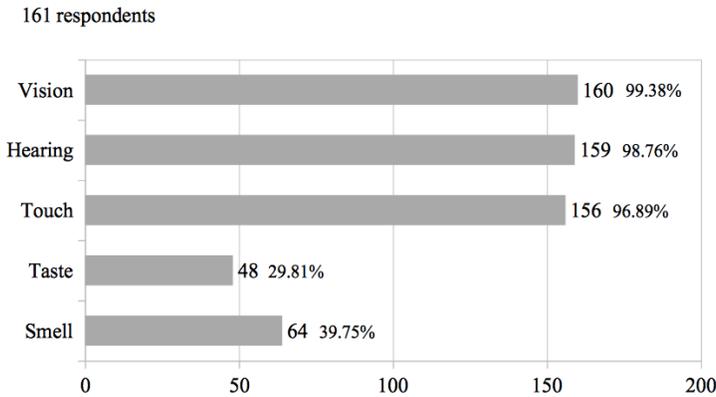
161 respondents

Figure 1. Using different senses in speech therapy classes

Fine motor skills are exercised, which contributes to the development of speech, so the involvement of touch is logical and significant. 48 or 29.81% of respondents use taste, it is almost one third of respondents. More than half of the respondents, 64 or 39.75%, use smell in their lessons. In future research, it would be interesting to find out exactly how this happens and what skills are promoted in this way.

More detailed questions were asked about the frequency of use of all senses. So, for example, about vision and hearing, the respondents answered with only two options – in every lesson or very often. Sight is involved in every lesson in 88.8% and very often in 11.2%. Hearing is involved in every lesson in 91.3% and very often in 8.7%. Basically, speech therapy lessons involve both vision and hearing, perhaps some respondents thought that they should be responsible for specially prepared tasks or exercises.

The answers about the use of touch are slightly different: in each lesson it is used in 45.3% of cases, very often exactly as many 45.3% of cases, but there are also answers that touch is used rarely – 8.1% of respondents. 1.3% of respondents believe that touch is used very rarely.

Interesting answers are about the use of taste. There are several answer options here (see Figure 2). When it comes to taste, only 0.3% of respondents admit that they use it in exercises and tasks in every lesson. There is also a comment in 0.3% of cases that it depends on the parents. This is related to various allergies, eating habits and the availability of products, including the need to use them. The number of respondents who use taste often is relatively small – 7.5%. An approximately similar number of respondents use taste rarely (28.2%); very rarely (32.3%) or never (30.5%). There are opportunities for the use of several senses in speech therapy classes.

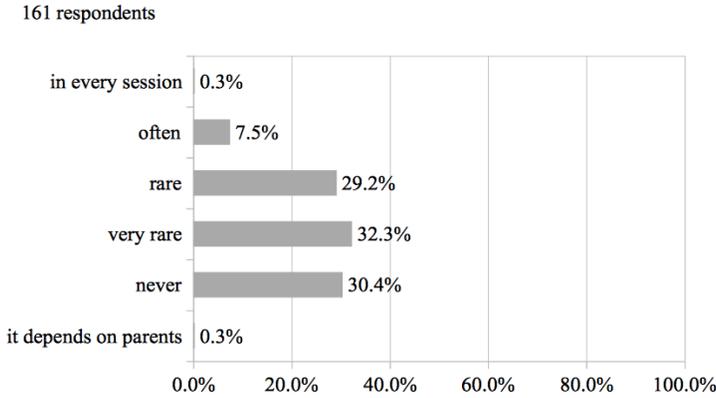161 respondents

Figure 2. Taste is used

The same options were available for answers about the use of smell (see Figure 3).
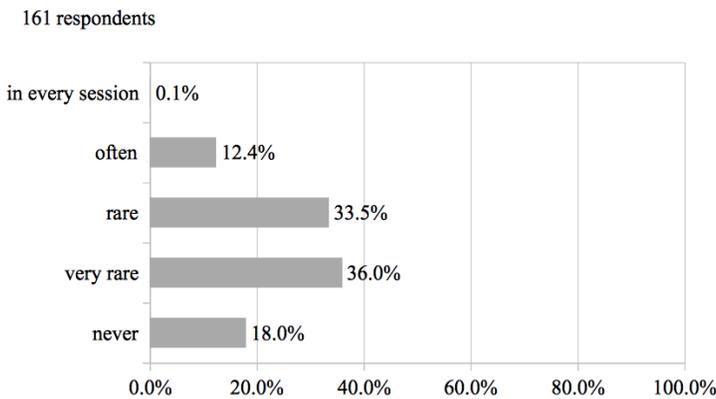
161 respondents

Figure 3. Smell is used

Smell is used in even fewer cases, only 0.1% use smell in every lesson, it would be interesting to hear comments about it. However, there are respondents who believe that smell is used more often (12.4% of cases) than taste (7.5%). On the other hand, respondents who admit that smell is never used (18.9%) are fewer than those who do not use taste (30.4%). More than a third of respondents express the opinion that smell is used rarely (33.5%) and very rarely (36.0%). This means that both smell and taste are senses whose use in speech therapy classes has the potential to give good results in the intervention process.

Conclusions

Based on the theoretical findings, ir can be concluded that preschool children learn using all their senses and the earlier intervention is started, the better the results.

Sensory interaction promotes neurodevelopment and is a huge opportunity for the development of the child in general.

The multisensory approach can be used for children with various disabilities and in the learning of various fields, it can be especially successfully used in speech therapy both in teaching the pronunciation of sounds and in learning vocabulary.

Since about half of the respondents know only approximately what the multisensory approach is or do not understand it at all, it is necessary to improve the education of future speech therapists by paying more attention to examples of good practice in the use of the multisensory approach.

Coming out of the empirical study the survey results showed that the abilities of using some senses (smell and taste) are not fully used the same as the use of touch could also be improved and perfected by involving more relevant tasks in speech therapy sessions.

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Changes in Social-Emotional Skills and Behaviour in Preschool Children after Participation in the Promoting Mental Health at Schools Program: The Social-Emotional Skills of Parents as a Mediator

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ABSTRACT

The social-emotional skills of preschool children develop at a rapid pace. How this development occurs is closely related to the child's environment. The social-emotional skills of the parents themselves play an important role in the development of a preschool child's social-emotional skills and have a strong influence on the development of children's prosocial behaviour and a reduction in behavioural problems (both internalised and externalised).

The aim of this study is to find out how the indicators of social-emotional competence and behaviour of preschool children change after participating in the Promoting Mental Health at Schools programme, based on teachers' assessments. What is the relationship between the social-emotional skills of parents (parents' assessment) and the social-emotional skills and behaviour of their children (teachers' assessment)? Do higher SE skills of parents (self-assessed) mediate the growth of children's social-emotional skills (as assessed by teachers)?

As part of the Erasmus+ research project "Promoting Mental Health at Schools" (PROMEHS), a quasi-experimental study was carried out with pre-test and post-test measurements in experimental and control groups. It was found that in the sample of Latvian pre-schoolers, the teachers from the experimental group noticed the decrease in children's behavioural difficulties and increase in prosocial behaviour and social-emotional skills in the experimental group were rated slightly higher in comparison with control group. Teachers rated children's social understanding and relationship skills higher when parents indicated that the relationship with their child was better. A higher level of social-emotional competence of parents correlated negatively with children's conduct problems. This study did not find that parents played

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a statistically significant role as mediators in the promotion of children's social-emotional competence during implementation of the programme.

Keywords: emotional and behavioural difficulties, parents' social emotional skills, PROMEHS, prosocial behaviour, preschool children, social-emotional skills

Introduction

The importance of social-emotional learning and its connection with the maintenance and preservation of mental health is increasingly being discussed and emphasised worldwide. Mental health is defined as a state of well-being in which everyone realises their potential, copes with the stress of everyday life, works productively, and is able to contribute to the development of their community. Studies emphasise that mental health is not just the absence of mental illness or symptoms, but it is an integral part of overall health, which includes the ability to interact socially and thus be more successful in providing for oneself, tolerating stress and being able to enjoy life in general. Mental health promotion requires attention from an early age. In the last decade, there has been an increase in children's mental health problems, and according to the World Health Organization, it is reported that up to 20% of school-age children already suffer from mental health difficulties and these difficulties begin to develop at an early age (WHO, 2015; 2018).

At preschool age, there is a rapid development of children's social-emotional skills. How this development takes place is closely related to the child's environment. There are several ways that social-emotional skills are defined and evaluated. In this study, social-emotional skills are evaluated based on the Collaborative for Academic, Social and Emotional learning model (CASEL). Based on this model, social-emotional competence is viewed as a set of skills: self-awareness – recognising emotions and thoughts; the ability to connect one's emotions and thoughts with one's behaviour; self-management – the ability to regulate one's thoughts, emotions and behaviour in different situations; social awareness – the ability to take the other's perspective, developing empathy, accepting diversity; relationship-building skills – the ability to create and maintain relationships with different people and groups; responsible decision-making – the ability to make decisions taking into account the well-being of others. Social-emotional learning (SEL) is defined as an integral part of the learning process that ensures that the learning process takes place to its fullest (CASEL, 2021).

Research emphasises the need to pay attention to issues of social-emotional development in children from an early age. One of the ways in which mental health difficulties manifest is through the externalising (directed at the external environment) or internalising (directed at the self) of behavioural problems (Boylan et al., 2012). Social-emotional learning is cited as one of the most

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effective interventions to maintain and preserve mental health and prevent behavioural problems (Durlak et al., 2011). Self-awareness, including the ability to identify emotions, is one of the first skills that children develop at an early age and is associated with higher academic skills as children enter school (Denham et al, 2003). From the age of two, children begin to recognise emotions more and more accurately. Recognising emotions in different situations and being able to regulate them is associated with a more successful relationships with peers. In a study in which social-emotional skills were taught to 2-3-year-old children, it was found that these children show more prosocial behaviour, which was manifested as helping, sharing and comforting (Brazzelli et al., 2021). Children who demonstrate more prosocial behaviour are accepted better into the peer group (Spinrad & Eisenberg, 2017). These children are evaluated by teachers to have higher prosocial behaviour and more successful cooperation abilities in interaction with peers (Arsenio et al., 2000; Denham et al., 1990). A higher social-emotional competence in children is associated with a greater ability to avoid disruptive behaviour (Elias & Moceri, 2012). Children's emotion recognition and regulation skills are manifested in the context of social interaction (Camras & Halberstadt, 2017). The way an individual feels and expresses perceived emotions is influenced by both the innate temperament – emotional reactivity, and social and environmental factors, such as poverty, family conflicts, child abuse. These factors can impair a child's ability to regulate their emotions (Thomas, Chess, & Birch, 1970; Thompson, 2014).

The implementation of supportive measures in schools is considered to be one of the most successful approaches for both children and teachers. Interventions can develop skills to deal with emotional and behavioural problems (WHO, 2021). Intervention studies research also mentions the relationship between parents' social-emotional competence and the development of a child's social-emotional skills. Parents' own social-emotional skills play an important role in the development of a preschool child's social-emotional skills and greatly influence the development of children's prosocial behaviour and the reduction of behaviour problems (both internalised and externalised) (Mortensen & Barnett, 2019; Wu et al., 2020). Studies examining the relationship between parents' beliefs about emotions, their social-emotional competences, and school-age children's emotion management skills indicate that parental beliefs and social-emotional competences explain 37% of children's emotion recognition abilities. Associations have been found between higher parental social-emotional competence and the better ability of children to regulate their emotions (Castro et al., 2015; Rogers et al., 2015). Children's social-emotional competence is influenced by both the child's individual characteristics and how social-emotional competence is developed in parents and the child's teachers (Garner et al., 2014). Research has found a relationship between a parent criticizing or punishing a child and the child's difficulty

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in regulating their emotions (Rogers et al., 2015). Emotion regulation abilities at age 5 have been found to be associated with social skills at age 7 and general peer acceptance at age 10 (Blair et al., 2015). The pattern of increasing differentiation mostly explains the recognition of emotions as a learned rather than an innate skill, which indicates the significant importance assigned by culture to the way that emotions are understood and defined (Halberstadt & Lozada, 2011).

Researchers note that there are relatively few scientifically reliable tools for assessing children's social-emotional skills. SSIS (SEL Brief Scales – Preschool Form) is recognised as one of the effective assessment tools for preschool children. Importantly, this tool includes multi-informant assessments – both teacher and parent surveys, which help to assess children's skills more comprehensively (Anthony et al., 2020). The SDQ (Strength and Difficulties) survey is designed to assess children's behaviour problems and prosocial behaviour. This survey also includes a multi-informant assessment of children's behaviour (Stone et al., 2010).

Studies mention the need to include not only children but also adults in social-emotional learning interventions. Therefore, it is important that interventions include not only children, but teachers and parents are also involved in the training, and they have the opportunity to improve their socio-emotional competence (Cefai et al., 2018). It is important to think about the development of the social-emotional competence of school personnel, which is related to their further ability to teach it more effectively to children using the appropriate methods (Justo et al., 2018). There is increased thinking about the development and implementation of evidence-based social-emotional curricula and methods in the school environment. Researchers emphasise the need to create programmes that could be systematically implemented more widely. Most social-emotional learning programmes are preventive and results of studies indicate that learning them is more effective in groups of children at a younger age, when behavioural tendencies are still beginning to develop (Fisak et al., 2011). The Promoting Mental Health at Schools programme (PROMEHS) was developed within the framework of the Erasmus + project, and its aim was to develop, implement and scientifically test methodological materials for increasing of social-emotional skills and resilience and reducing risky behaviour at school and preschool. The research is carried out within the framework of this programme and answers are sought to the following questions:

Q1 How do the measurements of social-emotional skills and behaviour of preschool children change after participating in the Promoting Mental Health at Schools programme, based on teachers' assessments?

Q2 Will higher parents' social-emotional skills be associated with higher children's social-emotional skills and lower behaviour problems (as rated by teachers)?

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Q3 Do higher parents' social-emotional skills (as assessed by parents) mediate the growth of children's social-emotional skills (as assessed by teachers)?

Methodology

Participants

As part of the Erasmus + project "Promoting Mental Health at Schools" (PROMEHS), a quasi-experimental study was conducted in October 2020 and April 2021 with pre-test and post-test data measurements for children aged 4–16 years in seven European countries: Italy, Latvia, Portugal, Croatia, Romania, Greece and Malta. Children from 7 preschools in Latvia participated in this part of the study. Participants were split into control and experimental groups. This study uses 488 teacher measurements of preschool children aged 4 to 6 years (mean age = 4.84; *SD* 0.84). Both genders were equally represented (50.3% boys and 49.7% girls). Parents evaluated their own social-emotional skills.

Measures

Teachers filled out the following surveys about the children:

- **The Strength and Difficulties Questionnaire** (SDQ, Goldman, 1997) teachers' form. The questionnaire includes 25 items and 5 subscales. Four of them represent difficulties: emotional problems, conduct problems, hyperactivity, peer problems. The fifth subscale represents prosocial behaviour. Each item is measured on a 3 point Likert scale rating from 0 (not true) to 2 (certainly true).

- **Social Skills Improvement System Social-Emotional Learning Brief Scale** (SSIS SEL, Elliott et al., 2020 a, b). The teacher K12 form evaluated children's social emotional competence. The questionnaire includes 20 items and 5 subscales: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Each item is measured on a 4 point Likert scale rating from 0 (never) to 3 (almost always).

Parents filled out the survey about their own social-emotional skills:

- **Social-Emotional Competences of Teachers** (SECTRS, Tom, 2012). The survey was modified within the framework of this study by adapting it to the sample of parents. The questionnaire includes 53 items and 4 subscales: parent-children's relationships, emotion regulation, social-awareness, interpersonal relationships. Each item is measured on a 6 point Likert scale rating from 1 (completely disagree) to 6 (completely agree).

- **Demographic data are also collected**: child's age, gender, belonging to a vulnerable group.

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Table 1. Internal consistency of each scale and composite scales of SDQ, SSIS SEL based on preschool children's (*n* = 488) teacher evaluations. Parents' evaluations (*n* = 488) of their own social-emotional skills (SECTRS).

	Scales	Cronbach's Alpha
		Teachers' evaluation
SDQ	Emotional problems	0.797
	Conduct problems	0.746
	Hyperactivity	0.871
	Peer problems	0.725
	Total difficulty*	0.895
	Prosocial behaviour	0.777
SSIS SEL	Self-awareness	0.758
	Self-management	0.741
	Social awareness	0.810
	Relationship skills	0.757
	Responsible decision-making	0.846
	Social-emotional competence**	0.932
SECTRS		Parents' evaluation
	Parent-children's relationships	0.823
	Emotion regulation	0.747
	Social awareness	0.702
	Interpersonal relationships	0.694
	Parents social-emotional competence***	0.921

*refers to composite scale combining the SDQ difficulty subscales
**refers to composite scale combining the SSIS-SEL subscales
*** refers to composite scale combining the SECTRS subscales

Results

The internal consistency of the survey scales was determined by calculating Cronbach's alpha coefficient. A coefficient of 0.7 indicates sufficiently high coherence. The Kolmogorov-Smirnov test, which was used to determine whether the sample followed a normal distribution, indicates that non-parametric methods will be used to further calculate the data because the sample does not follow a normal distribution.

Children were matched by code to combine the pre-test and post-test score, where only children who had scores in both tests were included in the data set. Missing values were replaced by the mean test item score. Internalising difficulty, externalising difficulty and total difficulty range from 1 to 3, where the larger the mean score, the higher the difficulty. Prosocial behaviour scores range

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from 1 to 3, where the larger the mean score, the higher the intention to help others. Self-awareness, self-management, social awareness, relationship skills and responsible decision-making and social-emotional learning range from 1 to 4, where the larger the mean score, the higher the level of social-emotional learning.

Regression analysis shows that for a child in the experimental group, the increase in social-emotional learning is 0.008 points more than a child in the control group, given that they both have the same score in the pre-test (see Table 2). Regression analysis shows that for a child in the experimental group, the reduction in the externalising difficulty score is 0.024 points more than a child in the control group, given that they both have the same score in the pre-test (Table 3). Regression analysis shows that for a child in the experimental group, the increase in prosocial behaviour score is 0.065 points more than a child in the control group, given that they both have the same score in the pre-test (Table 3). Although these differences are not significant for the Latvian preschool sample, they show a positive trend in the long term which means that the programme was effective.

Table 2. Teachers' reports of children's Social-Emotional Competences

	Group	Phase	Mean	Sd
Self-awareness	Experimental	Pre	2.78	0.50
		Post	2.95	0.55
	Control	Pre	2.93	0.63
		Post	3.00	0.60
Self-management	Experimental	Pre	2.82	0.54
		Post	2.89	0.55
	Control	Pre	2.96	0.63
		Post	3.02	0.61
Social awareness	Experimental	Pre	2.87	0.56
		Post	3.02	0.58
	Control	Pre	2.97	0.61
		Post	3.04	0.63
Relationship skills	Experimental	Pre	2.96	0.53
		Post	3.03	0.53
	Control	Pre	3.06	0.58
		Post	3.13	0.58
Responsible decision-making	Experimental	Pre	2.92	0.57
		Post	3.06	0.58
	Control	Pre	3.08	0.67
		Post	3.20	0.62

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Table 3. Teachers' reports of children's Behaviour difficulties and Prosocial behaviour

	Group	Phase	Mean	Sd
Internalising difficulties	Experimental	Pre	1.42	0.36
		Post	1.40	0.32
	Control	Pre	1.35	0.35
		Post	1.32	0.30
Externalising difficulties	Experimental	Pre	1.61	0.45
		Post	1.54	0.42
	Control	Pre	1.48	0.42
		Post	1.48	0.42
Total difficulty	Experimental	Pre	1.52	0.34
		Post	1.47	0.31
	Control	Pre	1.41	0.33
		Post	1.40	0.31
Prosocial behaviour	Experimental	Pre	2.32	0.45
		Post	2.40	0.41
	Control	Pre	2.37	0.42
		Post	2.39	0.45

There is a statistically significant negative correlation between children's conduct problems and better parent-children's relationships ($r = -0.15$, $p < 0.01$) and a statistically significant negative correlation between children's conduct problems and better parents' interpersonal relationships ($r = -0.09$, $p < 0.05$). In general, higher parental Total social-emotional skills correlate with fewer child conduct problems ($r = -0.13$, $p < 0.01$). Better parent-child relationships correlate with overall lower teacher-rated child total difficulties ($r = -0.10$, $p < 0.01$). There is a statistically significant positive correlation between better parent-child relationships and children exhibiting more prosocial behaviour ($r = -0.15$, $p < 0.01$) (see Table 4). The higher statistic of children's social-awareness (rated by teachers) shows a significantly positive correlation with parent-children's relationships ($r = 0.11$, $p < 0.01$) and also the statistic of relationship skills shows a significantly positive correlation with parent-child relationships ($r = 0.15$, $p < 0.01$). Other correlations are not statistically significant (see Table 5).

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Table 4. Correlations measuring associations between SDQ (teachers' evaluations) and SECTRS scales (parents' evaluations) in preschool children's sample ($n = 488$)

SDQ (rated by teachers)	SECTRS (rated by parents)				
	Parent-children's relationships	Emotion regulation	Social awareness	Interpersonal relationships	Total SEL parents
Emotional problems	−0.04	−0.01	−0.03	−0.02	−0.01
Conduct problems	−0.15**	−0.09	−0.08	−0.09*	−0.13**
Hyperactivity	−0.08	−0.04	−0.02	−0.04	−0.06
Peer problems	−0.07	−0.07	−0.05	−0.05	−0.07
Total difficulty	−0.10*	−0.06	−0.05	−0.05	−0.07
Prosocial behaviour	0.11*	0.01	0.05	0.04	0.06

*p < .05, **p < .01

Table 5. Correlations measuring associations between SSIS (teachers' evaluations) and SECTRS scales (parents' evaluations) in preschool children's sample ($n = 488$)

SSIS SEL (rated by teachers)	SECTRS (rated by parents)				
	Parent-children's relationships	Emotion regulation	Social awareness	Interpersonal relationships	Total SEL parents
Self-awareness	0.01	−0.03	−0.04	−0.01	−0.02
Self-management	0.09	0.04	0.01	0.02	0.06
Social awareness	0.11*	0.04	0.04	0.05	0.07
Relationship skills	0.10*	0.04	0.03	0.06	0.07
Responsible decision-making	0.08	0.07	0.01	0.02	0.06
SEL total	0.07	0.03	−0.01	0.03	0.04

*p < .05, **p < .01

The mediation model was built to answer the last question of this study. The first model, which relates child social-emotional competence pre-test to child social-emotional competence post-test, yields a total effect size of c = 0.685. The Sobel test shows that it is significant. The second model, which relates parents' social-emotional competence to child social-emotional competence pre-test, yields the effect size of a = 0.064 which is not statistically significant. The third model, which relates child social-emotional competence post-test to parents' social-emotional competence, yields the size of the effect b = 1.230 which is not statistically significant (see Figure 1).
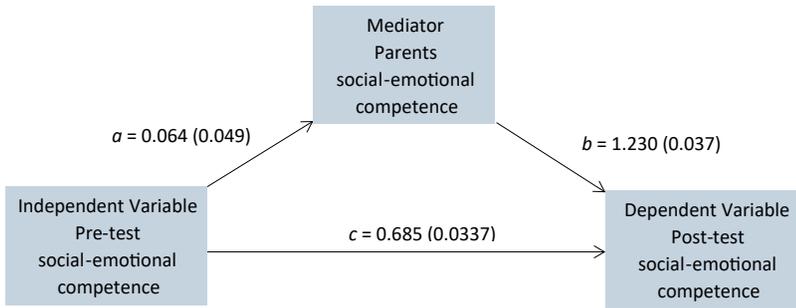
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Figure 1. Direct and indirect effect in a mediation model.

Discussion

Pre-test and post-test results in the Latvian preschool sample show a positive trend which means that teachers of the experimental group noticed a decrease of children's behavioural difficulties better and increase of pro-social behaviour in comparison with the control group and also social-emotional skills in the experimental group are rated slightly higher. The results correlate with previous studies, which indicates that implementation of the social-emotional learning program increased pro-social behaviour and decreased behavioural difficulties in children (Brazzelli et al., 2021; Elias & Moceri, 2012). In an analysis of all six European countries in which the Promoting Mental Health at Schools (PROMEHS) programme was implemented, the results indicate a statistically significant effectiveness rating, meaning that the programme is rated as successful in promoting socio-emotional competence and prosocial behaviour and reducing behavioural difficulties (Cefai et al., 2022).

Teachers rate children's social understanding and relationship skills higher when parents indicate that their relationship with their child is better. Although this study does not show a statistically significant relationship between children's social-emotional competence (assessed by teachers) and parents self-assessed total social-emotional skills, it can be concluded that the quality of the parent-child relationship could be a valuable resource for a child's ability to make social contacts outside the home environment. Moreover, the results of this study confirm those of previous studies that concluded that higher parent social-emotional competence correlates with lower behavioural difficulties and higher prosocial behaviour in children (Mortensen & Barnett, 2019; Wu et al., 2020). In this study from the teachers' perspective, pro-social behaviour is demonstrated more in preschool children where a better parent-child relationship is evident. In

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this study a significant relationship between the social-emotional competence of parents and children's self-management was not demonstrated, although there is a positive trend.

This study did not find that parents played a statistically significant role as mediators in the promotion of children's social-emotional competence during the implementation of the programme. Parents were encouraged to complete home activities together with their preschool children, and parents were invited to listen to three lectures on the principles of implementing the programme and instructions on how to use the handbook in the online version. However, parents' involvement in the programme was not controlled. The results indicate that social-emotional learning programmes implemented in educational institutions are particularly important and social-emotional learning can be successfully implemented in the preschool environment. These are especially important for vulnerable groups in society, including when the social-emotional competence of parents is low. Despite the fact that PROMEHS is a universal social-emotional learning programme, it has also been evaluated as effective for children from vulnerable groups (Cefai et al., 2022). Other studies also indicate that social-emotional learning is associated with children's higher achievements in academic studies, including literacy assessments, more successful relationships with peers and, in general, with the higher motivation of those involved in the learning process (Cavioni et al., 2020; Martinsone et al., 2022).

The established research results once again indicate that social-emotional learning is an integral part of the learning process. It is important to teach those skills from an early age. School plays an important role in reducing children's behavioural problems and increasing prosocial behaviour.

Conclusions

- Children who took part in the PROMEHS programme, showed a higher increase in social-emotional skills compared to children in the control group.
- Children who took part in the PROMEHS programme, showed a greater reduction in externalised behavioural difficulties and a greater increase in pro-social behaviour compared to children in the control group.
- Higher parent-reported overall social-emotional skills and higher parent-reported parent-child relationships are associated with lower teacher-reported behavioural difficulties in children.
- Better parent-child relationships are positively associated with higher children's social awareness, indicating that parent-child relationships help children to develop more successful social relationships outside the home environment.

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The Dimensions of Social Inclusion in the Right to Education

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ABSTRACT

Ensuring high-quality and inclusive education contributes to the development of the talent and potential of all learners, by making the right to education available, accessible, acceptable and adaptable to ever-changing society. The right to education is a universal right widely sanctioned at the international and national level. Despite legal protection, the realization encounters obstacles due to the social conditions and economic difficulties of individuals. The right to education knows no borders and nationality. Universality of the right to education is a prerequisite which require by the state, as the bearer of obligations, the construction of different bridges in legislation and policies towards inclusion in education. The paper addresses the social inclusion in education as a means to achieve and enjoy the right to education on equal bases. The research identifies different marginalised groups and the gaps that exist between their right to education and its realization. The dimension of social inclusion will be oriented based on the analyses of the key documents, legal framework, policies and strategies implemented by Albania. The paper highlights the steps needed to be taken by the state to implement inclusion in education, with the aim of enjoying the universal and unlimited right to education. Therefore, analyses of inclusive education will serve to take further steps toward universal right to education, as an embedded right in international human right law.

Keywords: Albania, educational policies, social inclusion, state obligations, the right to education, universal human rights

Introduction

The right to education is a fundamental human right with an inclusive nature. It is legally guaranteed to all without discrimination and it is recognized internationally as a universal right since the moment of the adoption of the Universal Declaration of Human Rights, 1948 (United Nations, 1948). The right

to education is known to both children and adults in every stage of life. Article 26 of the declaration, by stipulating that: "*Everyone has the right to education*", opened the way for the education of young people and adults in addition to children (Volio, 1979). Education aims to achieve an adequate standard of living, well-being, self-development and protection of human dignity (Beiter, 2006).

Provisions on education stipulated in the Universal Declaration of Human Rights are reaffirmed, reinforced and detailed later through a number of international instruments of the United Nations and other international organizations working in the field of human rights, the right to education and child's rights. However, all the covenants, conventions, declarations and frameworks in the field of education highlight the inclusive nature of the right to education, as a right that is known to everyone, regardless of the circumstances or factors that make individuals different from others (McCowan, 2010; Office of the High Commissioner for Human Rights, 1999; Coomans, 2007).

In order to implement the principles sanctioned in the Universal Declaration of Human Rights, the United Nations General Assembly adopted two international instruments, the International Covenant on Economic, Social and Cultural Rights (United Nations International Covenant on Economic, Social and Cultural Rights, 1966) and the International Covenant on Civil and Political Rights (ICCPR) on 1966 (United Nations International Covenant on Civil and Political Rights, 1966). The elements of economic, social and cultural rights constitute entitlement to receive an education, while the elements of civil and political rights are related to freedom in the right to education. Articles 13 and 14 of the International Covenant on Economic, Social and Cultural Rights have delineated the right to education, highlighting the features of this right (Tomasevski, 2003).

Further guarantees and protection are given to the right to education by a number of other international instruments such as the International Convention on the Elimination of All Forms of Racial Discrimination (United Nations International Convention on the Elimination of All Forms of Racial Discrimination, 1965), the Convention on the Elimination of All Forms of Discrimination against Women (United Nations Convention on the Elimination of All Forms of Discrimination against Women, 1979) and the Convention on the Rights of children of the United Nations (United Nations Convention on the Rights of the Child, 1989). Moreover, special attention has been given to inclusive and equal access to education through the UNESCO Convention against Discrimination in Education (The United Nations Educational, Scientific and Cultural Organization [UNESCO], Convention against Discrimination in Education, 1960). At the regional level, the right to education is guaranteed by article 2 of Protocol 1 of the European Convention for the Protection of Human Rights and Fundamental Freedoms (Convention for the Protection of Human Rights and Fundamental Freedoms (Council of Europe European Convention on Human Rights, as amended) (ECHR), Prot. 1, 1952).

Article 2 of the First Protocol of the European Convention on Human Rights: "*No person shall be denied the right to education*" categorically prohibits the denial of the right to education, making this right accessible for everyone (Pillai, 2012; Miço, 2019).

However, the right to education is not realized in the same way for all regions of the world. According to McCowan (2010), about 75 million children are out of school altogether – nearly half of these in sub-Saharan Africa – with many more having sporadic attendance and dropping out before completion. Even in Europe, despite increased policy effort and resources through the European Structural Funds to reduce the average of people who leave school early, the progress is slow. In 2007 the average EU rate of early school leaving for 18-24-year-olds was still 14.8%, 2.8 percentage points lower than in 2000 (Commission of the European Communities, 2008). While UNESCO raised the voice for unequal distribution of educational resources and opportunities given that an estimated 258 million children, adolescents and youth, or 17% of the global total, are not in school. At the same time, the number of out-of-school children in sub-Saharan Africa is growing (UNESCO, 2020).

Inclusiveness and education for all continue to remain one of the most discussed issues of education in Albania as well (Save the Children, 2012; Byrne, 2014; Byrne et al., 2021), regardless of the fact that the right to education is widely recognized and protected in the legal framework, starting from the Constitution of Albania (Constitution of Albania Law of 1998, Pub. L. No. 8417/1998). The Constitution of Albania has considered the right to education as one of the basic human rights, categorizing it in the group of economic, social and cultural rights. The right to education is guaranteed in equal basis for all citizens living in Albania, without discrimination, including in particular the persons belonging to the minority groups, foreigners and stateless persons. The legal framework in the field of pre-university education, higher education and vocational education and training guarantees this right by providing the appropriate means to make it available, accessible, acceptable and adaptable for all (On Pre-university Education System in the Republic of Albania Law of 2012, Pub. L. No. 69/2012; On Higher Education and Scientific Research in Institutions of Higher Education in the Republic of Albania Law of 2015, Pub. L. No. 80/2015; On vocational education and training in the Republic of Albania Law of 2017, Pub. L. No. 15/2017).

Regardless of legal guarantees, the cumulative dropout rate in Albanian primary education was 6.8 percent in 2016 (the most recent year for which there are international data), more than double the rate in the EU (2.5%) (Institute of Statistics, Institute of Public Health, ICF, 2018). According to the data published from the Institute of Statistics, UNESCO, the number of out-of-school children in 2020 is almost doubled in comparison to 2019, reaching 6221 children and 4823

adolescents. These data emphasize the need for inclusiveness in education translated into strategic governmental objectives. According to National Education Strategy 2021-2026, the government's overall goal remains to ensure education for all, including equity, equality and non-discriminatory access for children with disabilities and children belonging to minorities (Albanian Council of Ministers, 2021).

Background

In an increasingly diverse society, an important issue to be addressed is how human rights and freedoms are respected (Crépeau & Sheppard, 2013). Guarantees for the realization of basic human rights in a diversified society imply social inclusion of groups that carry the dynamics of culture traditions, ethnic and cultural identities, religious and other beliefs, artistic and socio-economic ideas, works and concepts (Council of Europe, 2016). Social inclusion is arisen as a consequence of social exclusion in society.

According to different studies, social inclusion is defined as the process of improving the terms of participation in society for people who are disadvantaged on the basis of age, sex, disability, race, ethnicity, origin, religion, or economic or other status, through enhanced opportunities, access to resources, voice and respect for rights (United Nations Department of Economic and Social Affairs, 2016). Whereas social inclusion in education is related to both society and the individual. According to Muijs et al. (2007), on the one hand social inclusion can be viewed as the meaningful participatory access of social groups and individuals into mainstream society. On the other hand, it can also mean the way how different individuals and groups are given recognition for who and what they are.

Regardless of the circumstances that limit the individual to enjoy the right to education, everyone has the right to participate meaningfully in the respective social group to realize this right. This is because the right to education has an inclusive nature. Social inclusion in education means that despite a variety of factors that bring exclusion, the right to education recognized by the state for each individual, will be enjoyed by all. Inclusion and equity in and through education require to address all forms of exclusion and marginalization, disparities and inequalities in access, participation and learning outcomes (UNESCO, 2016). This requires the will of the state to take multifaceted measures to make the right to education accessible to everyone.

According to Graham et al. (2019), a wide range of approaches ensure inclusive and equitable quality education. They may include enhancing access to quality and inclusive mainstream education and training for all learners despite their background; promoting more gender-balanced educational choices; using formal

and non-formal learning for facilitating the effective acquisition of the language of instruction and employment by migrants; promoting civic, intercultural, and social competences, mutual understanding and respect, and ownership of democratic values and fundamental rights at all levels of education and training; enhancing critical thinking, along with cyber and media literacy (Hytten & Bettez, 2011; Council of European Union & European Commission, 2015).

While in Albania, the issue of social inclusion in education occupies an important place not only in the legal framework (On Pre-university Education System in the Republic of Albania Law of 2012, Pub. L. No. 69/2012) but also in the national education strategy. According to the Albanian national education strategy, inclusion in education, as an integral part of the Sustainable Development Goals (SDG4), means the creation of conditions for all boys and girls, regardless of abilities and other characteristics, to attend classes together, taking care of their individual needs (Albanian Council of Ministers, 2021). The demand for inclusive education is connected to equal access to education, equality between educational paths, an inclusive school environment and inclusive teaching methods (Organising Bureau of European School Student Union, 2014).

Disadvantaged students are mainly inclined to remain outside the school system or to be forced to interrupt school. Studies show that a variety of factors influence social exclusion in education, such as gender, socioeconomic groups, ability or disability, mother tongues, learning styles and so on (Commission of the European Communities, 2008; UNESCO, 2015; Watson, 2009). However, regardless of the obstacles that lead to discrimination in enjoying the right to education, the role of education is indisputable in overcoming difficulties and eliminating the root causes of social isolation (Slijepčević, 2016). According to UNESCO (2015), no education target should be considered met unless met by all.

Social inclusion in education has become part of the agenda of a number of international organizations, anticipating as well the most successful policies to eliminate barriers to inclusion in education (UNESCO, 2015; European Union, 2016; United Nations [UN], 2014). In the focus of the policies, it is the support of the school to promote a more inclusive and engaging school culture towards well-being of the entire school community. Special attention is paid to the children with special educational needs and those from disadvantaged backgrounds and at particular risk in order to improve the access to inclusive settings and facilitate the transitions within the education system and from school to the labour market (European Union, 2017).

Developing teaching in a more personalized way through the improvement of competencies is considered one of the efficient approaches towards inclusive education. A personalized teaching process together with financial support

to schools attracting disadvantaged pupils, will reduce social differences and promote school attendance (Commission of the European Communities, 2008).

Inclusion of all learners in quality education from early childhood and throughout life is done by providing the necessary support to them according to their particular needs, including those from disadvantaged socioeconomic backgrounds, those from a migrant background, those with special needs and the most talented learners. To understand the best approach towards inclusive education, it is crucial to review and, where necessary, to improve the existing policies and practices in the field of education, training and non-formal learning in order to have efficiency (European Union, 2018).

Methodology

The dimensions of social inclusion in the right to education will be analysed in the light of international instruments, conventions and treaties approved by the United Nations, UNESCO and European organizations, the international and European policies, strategies and directives on school development and teaching, on school cooperation, social protection and social inclusion by following qualitative research method. The analysis will continue with Albanian legislation in the field of education, and strategies in the framework of social policies and inclusiveness. This article examines the function of documents as a data source in qualitative research and discusses document analysis in the context of identification of different factors that lead to social exclusion (Bowen, 2009). The document analysis will continue with the identification of problems and social groups that are excluded or limited from the opportunity to fully enjoy the right to quality education, based on the primary field studies of state organizations, international and local organizations, focusing on the reasons that led them toward social exclusion. The article will discuss the appropriate approaches dedicated to each specific group, that must be followed by the state as the duty-bearer to make education a priority right for everyone. The literature review will highlight the strengths and the weaknesses of strategic policy directions and legislative changes implemented in Albania, which have an impact on social inclusion in education. The analyses will answer to the following research question: what are the appropriate political and legislative mechanisms to follow towards an education without discrimination in a diverse society?

Results

The difference in the provision of the right to education in Albania has been recognized by different analyses of the education system. Differences are noticed between rural and urban schools, the quality of teaching staff and the availability

of resources. These differences are mainly felt by marginalized groups of children, such as Roma, Balkan Egyptians, low-income students, and students with disabilities (UNESCO, 2017; Poni, 2013; Taraj, 2018) affecting social exclusion or dropping out of school (UNESCO, 2015).

Although, various studies in Albania, supported from the respective legislation, have identified more categories of children of different social groups, who are at risk of being excluded from the right to education (Miço & Zaçellari, 2021). We can mention children isolated due to blood feud (People's Advocate, 2014; Meçe, 2017) or those who have dropped out of school, children from low-income families, children who live in deep mountainous areas, girls in areas with a backward mentality and other social problems, children out of parental care, children who are victims of domestic violence accompanied or not with the loss/removal of parental responsibility, street children and those who work, children in conflict with the law, migrant children and asylum seeker children, etc. (Miço, 2019; UNICEF, 2010; People's Advocate, 2015). The exclusion of these children from obtaining the right to education comes not only as a result of economic burden, but also due to the belonging to a certain minority group, (ex. Roma children), due to the lack of appropriate measures for life security from blood feud or other human rights and freedoms that affect the enjoyment of the right to education, due to labour migration or asylum, or due to backward mentality (the case of children living in conflict zones or in deep rural areas).

For each of these risk factors that endanger social inclusion in education, appropriate measures should be taken to make the child who belongs to that group, part of the school community. The measures should be multi-planned with the aim of solving in a sustainable way the inclusion of children in education.

The summary presented in the Table 1, shows the category of children at risk for social exclusion in education, the specific needs, the legal approach and the alignment of the measures with the Education 2030 Incheon Declaration, towards inclusive education.

Table 1. The summary of governmental approaches towards social inclusion in education

Priority target	Issues	Guidelines	The approach	Education 2030 Incheon Declaration (2016)
1				
Children of compulsory school age who have either dropped out of school or interrupted school attendance	School dropout; Irregular attendance.	Law no. 69/2012 "On pre-university education in the Republic of Albania"; Instruction no. 29, dated 02.08.2013, of the Ministry of Education and Science, "On the procedures for following part-time basic education".	"The second chance" is an educational program, which serves to reintegrate children till 17 years old, who have dropped out of school in the educational process. The school year for these children is expected to last less than the normal duration, offering a reduced learning process.	Second chance/re-entry program.
2				
Hidden children for the education system	The children belong to the age of compulsory basic education (up to 16 years), who have never attended educational institutions and may not be equipped with an identification number. These children are easily found on the streets when they should be in school.	Law no. 69/2012 "On pre-university education in the Republic of Albania"; Joint order "On the approval of the regulation for the implementation of the cooperation agreement dated 02.08.2013, "On the identification and registration in school of all children of compulsory school age".	Engagement of education, health, and internal affairs structures in the process of tracking and identifying registered and unregistered children in educational institutions with the aim of access to school.	Elimination of barriers.
3				
Children isolated as a result of the blood feud phenomenon	Children isolated as a result of the blood feud phenomenon do not participate in the educational process, since their lives are in danger if they leave the house.	Law no. 69/2012 "On pre-university education in the Republic of Albania" Instruction "On the procedures for the education of isolated children due to blood feud".	Method of providing the educational process outside of school, with limited time, in the homes of isolated children due to blood feud.	Special measures for education content.

Table 1. Continued

Priority target	Issues	Guidelines	The approach	Education 2030 Incheon Declaration (2016)
4				
Children who are in detention and prison institutions	Interruption of the educational process of children who are in conflict with the law and the socialization of children.	Code of Criminal Justice for Minors" Law 69/2012 "On pre-university education in the Republic of Albania".	Education of minors in conflict with the law, through education even as a compulsory measure to be followed minors, either as an obligation imposed by the court in the form of attending compulsory education or an educational program.	Second chance/re-entry program.
5				
Roma and Egyptian children	Lack of access to education for Roma children; Segregation.	Law "On the protection of national minorities in the Republic of Albania"; Law 69/2012 "On pre-university education in the Republic of Albania"; Instruction no. 34, dated 8.12.2004, of the Ministry of Education "On the implementation of the project "Second chance" for the education of pupils who have dropped out of school and pupils stuck due to blood feud". Instruction no. 6, dated 29.03.2006, of the Ministry of Education and Science, "On school registration of Roma students who do not have a birth certificate". Decision No. 107, dated 10.2.2010, of the Council of Ministers, "On the publication, printing, distribution and sale of textbooks of the pre-university education system".	Easing the economic and administrative barriers of Roma families, in order for the children to attend school; Providing scholarships/food quotas for Roma students throughout the school year.	Second chance/re-entry program; Elimination of cost, health and administrative barriers; Provision of school meals.

Table 1. Continued

Priority target	Issues	Guidelines	The approach	Education 2030 Incheon Declaration (2016)
		Decision no. 298, dated 19.05.2021, of the Council of Ministers, "On the approval of the pilot project "On measures to promote learning, attendance and progress of the students of the 9-year school 'Naim Frashëri' Korçë, for the school year 2021-2022".		
6				
Children with disabilities	Need for adapted education, with equal access according to the needs of children with disabilities.	Law 69/2012 "On pre-university education in the Republic of Albania"; Decision no. 837, dated 03.12.2014, of the Council of Ministers "On the recognition of sign language in the Republic of Albania, published in the Official Gazette no. 190, 2014, Instruction no. 38, dated 07.10.2014 of the Ministry of Education and Sports, "On the criteria of assistant teachers for students with disabilities in public institutions of pre-university education"; Order no. 195, dated 25.4.2016, of the Ministry of Education and Sport "On the approval of the document "Education and training of teachers for inclusiveness – Profile of the inclusive teacher" Guideline of the Agency for Quality Assurance in Pre-University Education (2020). On the realization of the subject program and the evaluation of the students during the home learning.	The integration of children in general public education, the presence of an assistant teacher during the teaching process with special knowledge to treat children with disabilities and the creation of a suitable environment.	Special measures for education content; Teacher training on inclusive education.

Table 1. Continued

Priority target	Issues	Guidelines	The approach	Education 2030 Incheon Declaration (2016)
7				
Refugee and asylum seeker children	The inclusion of refugee and asylum-seeking children in the educational system and the need for a more suitable education for them.	The Convention for the Protection of Human Rights and Fundamental Freedoms. (1950) and the First Protocol of the Convention (1952). UN Convention relating to the Status of Refugees 28 July 1951. The law no. 10/2021 "On asylum", Law 69/2012 "On pre-university education in the Republic of Albania"; Decision of the Council of Ministers, "On determining the minimum living conditions and social conditions for international protection applicants". Instruction no. 10, dated 10.05.2021 of the Ministry of Education and Sport, "On registration and support in public pre-university educational institutions of children of persons in migration / asylum situation, refugees, unaccompanied foreign children, children returning from emigration, from areas of conflict or children, victims of trafficking, in the Republic of Albania".	The inclusion of children into the mainstream education. The right to education is provided conditionally, in accordance to the status of children. In the case of international protection, the right to education is limited only to children.	Individual educational teaching plan; assistance in learning and teaching materials; Elimination of administrative barriers.
8				
Returned migrants' children	The inclusion of returned migrants' children in the educational system and the need for a more suitable education for them.	Law 69/2012 "On pre-university education in the Republic of Albania"; Instruction No. 44, dated 21.8.2013 of the Ministry of Education and Science, "On determining the criteria and procedures for the eqivalence of the diploma in pre-university education	Drafting of a special curriculum for the Albanian language in order to help the children of the returned migrants, as well as the organization of summer schools	Individual educational teaching plan; assistance in learning and teaching materials; Elimination of administrative barriers.

Table 1. Continued

Priority target	Issues	Guidelines	The approach	Education 2030 Incheon Declaration (2016)
		of students coming from abroad". Instruction no. 10, dated 10.05.2021 of the Ministry of Education and Sport, "On registration and support in public pre-university educational institutions of children of persons in migration / asylum situation, refugees, unaccompanied foreign children, children returning from emigration, from areas of conflict or children, victims of trafficking in the Republic of Albania".	for this purpose (Zaçellari & Miço, 2019).	

Discussion

As discussed above, the groups at risk of social exclusion in Albanian education are helped by different approaches, some of which are similar to the measures provided by the Education 2030 Incheon Declaration. As part of the strategies that promote inclusion in education, other measures have been provided to ensure that no child is left out of the education system, such as the provision of school meals/nutrition and health services, inclusive school facilities and language policies to address exclusion (Education 2030 Incheon Declaration, 2016).

However, not every measure taken by the state serves to social inclusion in education. In the context of isolated children due to blood feud, the establishment of the educational mechanism where the teacher goes two or three times a week to one of the isolated families to partially explain variety of subjects held in school, is more an attempt to offer a partial educational process, than to create social inclusion in education for this group. Children remain excluded from their age group by not being part of regular teaching and learning. In this way, they neither manage to feel secure in enjoying life, nor participate in the educational process in a full and regular way, nor feel included in teaching process (Meçe, 2017). Moreover, in relation to this category of children, it is necessary to work towards increasing the educational role through redesigning

the teaching programs and educational activities with the spirit of tolerance, against self-judgment, blood feud and revenge (People's Advocate, 2015).

The provision of food (meal) for Roma children in "Naim Frasheri" elementary school located in the south eastern part of Albania, has increased the segregation of Roma children, who instead of feeling more included in the school, they feel isolated within the community. Regarding this issue, the European Court of Human Rights has found the Albanian government guilty of segregating Roma and Egyptian children at a school in Korca in the country's south (Case of X and Others v. Albanian *(Applications no 73548/17 and 45521/19)*.

On the other hand, the inclusion of children with disabilities in mainstream education, without implementing the legal requirements for assistant teachers, has not helped the children to feel included in classroom or in learning process (Save the Children, 2012). Starting from 2020, the necessary legal framework began to be implemented for licensing the teachers in change of taking care of children with disabilities. This process was also accompanied with the opening of the assistant teacher positions, especially for helping children with disabilities to integrate into the learning process and class community (Albanian Ministry of Education and Sport, 2019).

Moreover, despite the fact that nine groups of citizens are legally recognized as national minorities (On the protection of national minorities in the Republic of Albania, Pub. L. No. 96/2017), only a few of them may exercise the right to learn the language of the minority. The lack of teaching, both in the language of the minority and in the Albanian language, excludes these children from belonging to the class within the context of the diversity they carry.

It is necessary to identify the children according to the specific group, by understanding the level and type of obstacle regarding their inclusion in education. For this, it is necessary to track the children in time, and to understand the follow-up of each one's problem. In order to plan the inclusion of each child in education in the framework of the diversity that the child carries, it is required to find the mechanisms that serve for inclusion in education each specific category of children. The adaptation of the right to education according to the needs of special social groups makes possible the full realization of this right in the context of the current social diversity.

Conclusions

The need to address social inclusion in education comes as a result of the increasing diversity of society both at the global and national level. The paper has identified different social groups that are most likely to be inclined towards social exclusion in education, emphasizing the conditions that lead towards the lack of enjoyment of the right to education. The analysis of marginalized groups

highlighted the specific needs of each group, the legal framework that serves as a tool to achieve social inclusion in education, as well as the comparison of specific Albanian policy approaches with those provided for in international strategic documents such as the Education 2030 Incheon Declaration.

During the analysis, it is highlighted the need for cross-sector policies and plans consistent with the overall 2030 Agenda for Sustainable Development, in order to address the social, cultural and economic barriers that deprive children of education and quality learning.

Through the research and analysis of the organizations that deal with the protection of human rights in Albania, the need to have multi-dimensional plans, together with multiple approach solutions was emphasized in order for the policy discourse to focus on specific policies for equal access to quality education.

Under the light of the first principle of the European Pillar of social rights, which states that: "Everyone has the right to quality and inclusive education, training and life-long learning …", the social inclusion in education will strengthen social cohesion and will serve the children to have positive and inclusive common sense of belonging in society.

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Support for Children of Returning Migrant Families in Latvian Schools

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ABSTRACT

Every year, approximately 800 families return to live in Latvia. Remigrant (returning migrant) families both include parents who were born in Latvia and spent their childhoods there, or were born abroad. The number of students from remigrating families in Latvian educational institutions is constantly increasing.

Although there is some support for children from remigrating families, it does not necessarily reflect all the needs for a supportive and inclusive learning environment in an educational institution, especially in relation to student well-being, achievement and participation. Studies in Latvia show that if problems identified by the representatives of educational institutions (principals and educators) are more related to the learning content or the knowledge of the students, then the parents emphasize the aspect of attitude more. The parents believe that teachers sometimes lack understanding and tolerance, because the focus is more on learning subjects than building a class team, promoting cooperation or preventing conflicts.

One of the resources to solve the identified problems of the integration process of students with foreign educational experience in schools is not only the collective mutual cooperation of the educational institution, support measures, cooperation with the student's family, but also targeted work with the student's classmates and the entire school community. This can contribute to the fact that every student in an educational institution can feel safe, motivated and passionate about eliminating the gaps in their knowledge and being included in the Latvian education system.

The research uses theoretical analysis methods: an analysis of scientific literature and an analysis of international experience. Based on this, criteria for evaluating support will be developed.

Keywords: Children, family, return migrants, school, support

Introduction

Migration has been a part of human history since ancient times. Families move to other countries for a variety of reasons, and the reasons for returning differ just as much. Some of these motives are the pursuit of a better quality of life, new work or educational opportunities, or the desire to provide their children with a sense of homeland that they once lost.

Returning to Latvia after a period of time spent abroad has so far been a relatively little studied topic in the study of migration processes in Latvia. There is a lack of in-depth studies based on the study of the practice of the return process, focusing on Latvian nationals who have returned to their homeland – remigrants.

Every year, approximately 800 families return to live in Latvia. Remigrating families include parents (of returning migrant children) who were born and raised in Latvia, and those where the parents were born outside of Latvia, but one or both grandparents were born in Latvia. According to definition (Ministru kabineta noteikumi, 2018) a remigrant is defined as a Latvian national (citizen, non-citizen or person born in Latvia) who has emigrated to another country for the purpose of changing permanent residence for at least one year.

There are several important issues that need to be resolved in order to make remigration more successful. Although a plan of support measures has been created and a series of actions have been taken to support returning migrants and their families, it is not always successful. Integration is hampered by many factors that are political, economic, social and other issues that are important to people.

Research shows that until 2017, personal motives contributed the most to returning to Latvia – the desire to be with family, the desire to give children an education and the opportunity to live in their/their parents' homeland, rather than economic motivation (Zača, Hazans, Bela, 2018). The number of students from remigrating families in Latvian educational institutions is increasing: in the school year 2015/2016 there were 664 students, in 2017/2018 835 students, but in 2019/2020 already 1680. Remigrated students have studied in more than 75% of Riga municipal educational institutions in the last three years (Mihailovs, 2020).

For adult expats, this is often a step back into a normal environment, but what about children? How do children feel when they return to their parents' or grandparents' homeland, and integrate into school and society in general? Gross has drawn attention to the fact that a child's well-being in the context of migration is definitely influenced by various factors – the student's age, ability to adapt to new conditions, parents' busyness or participation in school life, the attitude of teachers and the competence of the entire school community in working with newcomers both from the point of view of the learning process and the point of view of sensitivity, as well as the readiness of other children and the attitude towards children with a different level of the national language, subject knowledge, different mentality, etc. (Gross, 2022).

In 2018, 4,852 remigrants returned to Latvia. Children (aged 14 and younger) and young people (aged 25 to 34) make up the largest part of returning migrants (Centrālā statistikas pārvalde, 2019). In the study on the consolidation of a unifying national identity and cultural space of Latvia during (Mieriņa et al., 2017) it is said that 30% of returning migrants who have children encountered difficulties related to their children's education. Dissatisfaction with the school environment certainly significantly reduces the willingness of both sexes to stay in Latvia permanently and connect their life with Latvia in the long term, as well as the probability of evaluating their decision to return as correct.

What is at the root of this dissatisfaction? Are the problems related to the lack of suitable methodological and teaching materials in educational institutions, the need for further education of pedagogues on the inclusion of learners in the Latvian education system, or are there other factors? There are studies on support measures educational institutions need to improve for their work with immigrant and return migrant children, but there is a lack of in-depth research on what support measures students need to help integrate into school.

The research questions that will be answered in this study are:

1. What is the regulatory provision for support for the children of return migrants in Latvian schools?
2. What problems have been identified and what kind of support would be needed, taking into account the experience of Latvia and other countries?

Methodology

While researching what support measures are needed for children of returning migrant families to help them integrate into school, both theoretical literature and normative documents on remigration in general and related issues were searched and analyzed. Data from the Ministry of Education and Science provided information on how many remigrating students study in Latvian educational institutions (Izglītības un zinātnes ministrija, 2020). The regulations of the Cabinet of Ministers explain the procedure by which learners are admitted to general education programs. These regulations apply both to learners who have returned or moved from their home country to permanent residence in Latvia after a long absence and who have previously received education in Latvia, as well as to those who have not previously studied in Latvia (Ministru kabineta noteikumi, 2022). They also indicate what support and for how long these students are expected to receive. The guidelines for the development of education in Latvia, which is a planning document on a unified state policy and development strategy in education from 2021 to 2027, were examined. Also, policy outcomes for all population groups were analyzed. Special attention was paid to the issue of the planned inclusive learning process in order to understand whether and how the

set goals could facilitate the integration of remigrant students in Latvian educational institutions in the future. Order of the Cabinet of Ministers on National Identity, Civil Society and Integration Policy Guidelines 2012-2018 for 2018, indicates the planned and accomplished in relation to diaspora-decisions, as well as the real remigration processes, which are related to providing information to those who are thinking about returning, and specific support to those people who have returned, paying attention also to how to achieve the inclusion of the children of return migrants in the Latvian education system (Ministru kabineta noteikumi, 2017).

In this study, information from the State Service of Quality of Education (Izglītības kvalitātes valsts dienests, 2014) was used about students (children from remigrant families) who have returned from studies in another country. During this research with the aim of finding out what the integration of these students into the Latvian education system has been like, 64 educational institutions of Latvia were identified, where students who have returned from studies in another country have studied/are studying. A total of 184 questionnaires were received, incl. 31 from directors of educational institutions, 111 educators and 42 parents.

Information about remigrant children in Latvia and other countries was especially searched for, analyzing the research of various authors on this topic. The theoretical literature on remigration and its effects in general was explored using the following keywords: children, family, school, return migrants, support. In the databases Researchgate, Scopus, Sage and Springer, in general, more than ten articles were selected that researched and analyzed the experience of remigrant children in Latvia and the world, as well as the various challenges that children and young people face when moving (Vathi and Duci, 2016; Dumitru and Langa, 2016; Gross, 2022; Catalano, 2016; Parrenas, 2005). The results of quantitative and qualitative studies of return migrant children in Latvia (Hazans, 2016; Ose, 2015; Pičukāne and Mihailovs, 2017) provide theoretical material about the situation in Latvia, while Lithuanian remigration researcher (Bagdonaitė, 2020) analyzes the experience of teachers in working with return migrant children in Lithuania, citing challenges and good practices that help these children integrate into schools. Here you can see a lot of similarities and you can easily draw parallels with the difficulties faced by the children of returning migrants in Latvian schools. The most important conclusions that were obtained are that all political decisions related to the migration process affect the children of migrant families. Appropriate and thoughtful preparation of the education system for the reception of returnees provides opportunities for successful integration of returnees and their children, creating long-term added value for the country. Both external and internal factors affect the children of returned families, so it is difficult to find the right approach for the successful integration of these children in the new home country.

The analysis of the theoretical literature and regulatory documents on the support measures intended for the return migrant children helped to find answers to the questions about what kind of regulatory provision is intended to support the return migrant children in Latvian schools. It revealed both what has been introduced or is planned to be introduced in legislation to facilitate the inclusion of these children in educational institutions, as well as what problems have been identified. Based on the obtained data, it was possible to create criteria for what kind of support remigrant children in Latvia would need, taking into account the experience of Latvia and other countries.

Results

The research found out what the regulatory provision is for the return migrant children in Latvia and what measures are implemented to promote their inclusion in educational institutions.

In order to ensure all possible support for the inclusion of reemigrated children in general educational institutions of Latvia and to prepare pedagogues to work with children who return to Latvia from abroad, the Latvian Language Agency regularly organizes professional competence improvement courses for pedagogues. Informative seminars are also organized for municipal education work coordinators, school administrations and teachers who work or will work with re-emigrants, immigrants and asylum seekers. In 2021, an online guide was published for parents of returning migrants who plan to return, as well as for teachers of these children, to help understand the problems that such children may face.

When living abroad, families have wide opportunities to improve their knowledge of the Latvian language together with their children in an attractive and engaging way, as well as learn the content of other subjects at the same time. Latvian language learning programs and additional materials for Latvian language learning for diaspora children of different ages have been developed, as well as reading books, animated films and video lessons for understanding grammar questions. Latvian Language Agency constantly develops and improves Latvian language learning materials, including electronic teaching aids that are publicly available on the agency's website. The currently developed descriptions and materials of the functional levels of the Latvian language provide an opportunity to improve the teaching and assessment of the Latvian language for all groups and skill levels of Latvian language learners. This means that students have great opportunities to learn and improve the language even before they start school in Latvia.

Joining a new school is already a process full of challenges. It is even more difficult for a student from a remigrant family if there is a lack of knowledge of the Latvian language, different curricula, etc. In the study of the State Service

of Quality of Education "Inclusion in the Latvian education system of students of general education institutions who have returned from studies in another country" it was found that only 4 out of 36 interviewed pedagogues indicated that the student who returned from studies in another country and continued their studies in Latvia did not need special support measures (Izglītības kvalitātes valsts dienests, 2014).

The regulations of the Cabinet of Ministers on the procedure (Ministru kabineta noteikumi, 2022) in which pupils are admitted to general education institutions and deducted from them, the mandatory requirements for transfer to the next class stipulate that a pupil who has previously studied in Latvia, returning from studies in another country, is admitted in a class appropriate to his age and needs, observing the sequence of previously learned curriculum. In order to diagnose the learner's learning needs and plan the further learning process, by inviting the learner and the parent or responsible official of a minor learner, the level of the learner's language skills and the level of the learned content are determined. Then, by the order of the director, the state-funded support measures to be implemented during one school year are determined for the acquisition of compulsory basic education – the improvement of the skills of the Latvian language and literature, history and social sciences subjects, as well as the learning of the subjects that differ from the Latvian and the student's previously learned educational program. It has been established that additional hours may be charged for support measures in schools and paid for from the state budget.

If a student from another country has not previously studied in Latvia, then state-financed support measures for obtaining compulsory basic education can be implemented within one to three school years (Ministru kabineta noteikumi, 2022).

What are the conclusions about the proposed regulatory support for remigrant children in Latvian schools? The evaluation of the student's knowledge is essential in order to find appropriate support measures, such as an individual study plan, the amount of additional consultations or the possibility of attracting the help of a psychologist, social pedagogue, speech therapist, or other specialists.

The materials available for learning and improving the Latvian language are numerous and diverse. This indicates that it is possible to improve Latvian language skills both in the family and at school, but there is probably not enough information on where and what to look for and how to use them meaningfully.

Support measures are mainly intended for subjects related to the Latvian language. It would be important to determine the level of knowledge of the learner in each subject. It is important to create a certain learning plan for each student, according to his knowledge, in which teachers and students agree on specific learning goals and the time for their implementation. Even though the support offered seems wide enough, it is not always available and sufficient for

all remigrant students to successfully integrate in an educational institution. Normative rules do not say anything about the time of adaptation in which there would be no grading. This would be an important psychological support for the return migrant children. The adaptation period would allow students to familiarize themselves with the new situation in the classroom and school in general, to strengthen or improve their Latvian language skills, to overcome differences in educational programs and gaps in knowledge, in order to safely and confidently continue the learning process.

It is important to start with the understanding that when analyzing the role of children in migration processes, the return experience of children is special, taking into account that their move to the country of origin of their parents cannot always be described as "returning home", as some were born and grew up in another country. For many children, the new "home" is a completely new world with a different language, different rules and different attitudes from other people than what they have experienced so far. For these children, the move is not really a return, but rather a migration, since they were born in a different host country.

For children, "returning" means changing the existing social environment and they have to start building new relationships in an often unfamiliar environment. It can be very difficult for them to switch between different school systems and this transition can cause confusion and insecurity for the child. Schools that accept remigrating children do not always show understanding and flexibility in adapting to the individual needs of the student, both psycho-emotionally and academically.

Schools are one of the first and perhaps now the most impactful challenges that migrant children face when they move, and these experiences have lasting effects throughout a person's life.

Although the support program for remigrating students is working, qualitative and quantitative studies (Ose, 2015; Gross, 2022) on the inclusion of students in Latvian schools show that the Latvian education system as a whole is still not welcoming to families returning to Latvia. For a long time, efforts have been made to ensure that the returning migrant children are given a one-year transitional period, where they would not be given grades in academic subjects. During this time, the child would improve his language skills and develop an understanding of the lessons, but would not yet receive an assessment. Low grades do not motivate students to learn.

These children often have a different knowledge of the Latvian language than local children, which also makes it difficult to perceive the learning material in other subjects at school. Many children of returning migrants have problems understanding the Latvian language, speaking fluently in Latvian (Mihailovs, 2020), which actually makes it difficult to learn all subjects and communicate

with both teachers and classmates. Even though schools offer supplementary lessons of the Latvian language prescribed by the state, the reality is often that teachers are not prepared to teach Latvian as a foreign language. Schools often lack the resources to provide additional support for language learning, both in terms of human resources and teaching materials.

There is also no unified system in the country, who will provide this help to students, when and how, and how the funding provided by the state will be distributed. Support measures for students who have recently returned to Latvia (additional learning of the Latvian language or other subjects not previously taught in the country of residence, orientation in Latvian culture, consultations of a psychologist or social pedagogue, which since 2012 are provided for by the Cabinet of Ministers' regulations for students who have returned to Latvia), many respondents did not receive or received only partially (Ose, 2015).

What are the research results on how the return migrant children integrate into Latvian schools? Both the students themselves, their parents, and the teachers admit that the teachers lack experience in working with re-emigrant children, and this is exactly what causes difficulties. Considering the limited experience with such students, schools and teachers lack recommendations, consultations and examples of positive practice for the successful inclusion of such children in school.

Teachers indicate that they lack both methodology and materials available at school for working with remigrants according to different age stages, as well as a lack of information about existing materials focused on teaching language to them, and the skills to combine all the needs of a remigrant in language and environment learning. Most of the pedagogues who participated in the study indicated that they did not know where to look for support in working with remigrated students (Izglītības kvalitātes valsts dienests, 2014).

The presence of a teaching assistant in the school during the initial period would help the integration of recently returned children into the education system. The law on the basic educational development standards in Latvia for 2021-2027 (Ministru kabineta noteikumi, 2021) states that there is not enough available support staff in local government basic and general secondary education institutions, especially speech therapists, educational psychologists and teaching assistants, as a shortcoming of the current system. Teaching assistants are mentioned in the state support measures, but they are provided with municipal funding, which is often insufficient. Individual student lesson plans would be another school support measure, but they are not always created and used. In a survey of Latvian school principals and teachers (Mihailovs, 2020) regarding the most significant problems encountered by remigrated students, the mismatch of educational programs, students' lack of knowledge of the Latvian language, differences in culture and values, as well as insufficient human and financial resources for the creation of individual plans and for implementation. So, the problems mentioned by the

pedagogues are related to the teaching content, the knowledge of the students and insufficient financial possibilities in terms of both support staff and teaching materials, with little attention being paid to the well-being of these students.

When surveying parents of remigrated students in the same study (Mihailovs, 2020), parents also mentioned the inconsistency of educational programs, a large number of parents also mentioned problems related to the lack of understanding and tolerance of educators, bad relations with classmates, classmates "doing wrong" and lack of initiative by educators. The qualitative research conducted by Ose on remigrant students in Latvian schools also shows that, from the point of view of parents and students, the attitude of teachers towards students who have returned to Latvia varies from a supportive attitude, an individualized approach in working with them, to neglect, ignoring the student's needs. Teachers are often overworked, disinterested and intolerant (Ose, 2015). Parents also see differences in the educational system and teaching methodology of Latvia and their previous home country, indicating that Latvian schools are more oriented towards knowledge, remembering, "implantation", rather than critical thinking and the ability to apply the acquired knowledge in real life.

In in-depth interviews, even the factors that hinder the inclusion of return migrant children in schools (Gross, 2022), the parents of remigrant children mentioned the different "atmosphere" in their previous and current school in Latvia, including children's behavior in the classroom, where children in schools in Latvia are ruder, less careful, less polite, less tolerant. Parents indicate that psychological difficulties and bad relations with classmates/schoolmates are a problem that often hinders integration more than difficulties in learning. Such concerns are not unfounded. Latvia's complex historical experience contributes to a low society's tolerance for diversity, multiculturalism and makes it difficult to integrate into Latvian society. Using Eurostat data, Zubikova (2021) revealed that Latvia has the lowest level of immigrant integration (along with Slovenia) of all 10 countries that joined the EU in 2004.

Based on the results of the study, Gross (2022) also acknowledges that the obstacles that hinder the successful integration of returning students into the Latvian school system are also related to the lack of communication/cooperation between the school and parents, which includes communication not only about the students' academic performance, but also the psychological wellness in a educational institution. Parents would like to cooperate more with the school and receive feedback from teachers more often in order to feel informed about their child's difficulties and progress both academically and psycho-emotionally.

The different atmosphere, evaluation system, teacher-student relationship often cause the student anxiety and confusion about what is expected of him, which of course does not contribute to successful integration in the educational institution.

Discussion

The world is currently changing the understanding of what role education plays in shaping our common world and common future. The world events of recent years (COVID, the war in Ukraine, various global changes, etc.) clearly show that the movement of people from one country to another is often externally created, a need that is not related to an individual's or family's desire to move.

Global problems affect many people around the world, driving migration and forcing people to adapt to the situations they are exposed to. The increasing mobility of people around the world, regardless of why they change their place of residence, has created a new pedagogical reality that brings the world's cultural and racial diversity into educational institutions. Teachers increasingly have to work in new environments with students who have different educational backgrounds, languages and cultures. All of this forces us to improve our understanding of the diversity of people and the differences of each one, calls us to be tolerant and open-minded, looking at diversity as an advantage, not a disadvantage in an educational institution.

How do others in the world deal with these issues? It is worth taking into account the experience of our closest neighbors, taking care to prepare potential remigrants and make their integration easier and faster. In Estonia, the "Program for compatriots, 2014-2020" was developed, the purpose of which was to support Estonians living abroad, helping them maintain their Estonian language skills, maintaining Estonian national culture and identity, as well as providing support to those who are considering returning to Estonia (Hartman, 2021). Cassarino (2008) has emphasized in his studies that the previous preparation of repatriates, both on an individual psychological level and from the point of view of society, is of great importance. It makes the return significantly easier. The program provides a significant amount of support for educational activities, realizing that knowledge of the language is one of the prerequisites for returning to Estonia, being included in the education system and actively participating in the Estonian cultural space. In Estonia, the same techniques are used for remigrant students as for immigrant children – each child is provided with an individual approach and an adapted learning plan that meets his individual needs.

In Lithuania, compensatory training is provided to the children of return migrant families and it is financed by the state. As an example of good practice, the model where researchers and practitioners cooperated, creating an online platform to help teachers better understand diversity, and to promote understanding of how to treat such remigrant and newcomer students should be mentioned. When working with returning students, teachers in Lithuania, as in Latvia, face new challenges that require preparation, new methods, materials, as well as external help for the school, for example with support staff and additional funding. As for the measures planned in Lithuania, it should be mentioned that,

in order to facilitate the integration of returned children, students who do not speak Lithuanian at all can be provided with the opportunity to learn Lithuanian for one year in a remedial class or a remedial mobile group before starting school. Of course, not all schools in Lithuania have the opportunity to create such classes, especially if only a few children return to some schools. In this case, it is proposed to organize weekend language classes in the regions as needed. The positive thing in that case is that the child is not separated from the class of his peers and with support he can continue his studies together with everyone.

The main obstacles currently faced by Lithuanian educational institutions are Lithuanian language training and the lack of pedagogues' competencies, specifically in terms of tolerance. They were identified as particularly important challenges in a study carried out in Lithuania (Bagdonaitė, 2020). As a priority for the more successful inclusion of remigrant children in Lithuanian schools, the development of a cooperative environment (teachers, parents, children) within the school is set as one of the most successful methods for facilitating the work of pedagogues with such students

According to Targamadze and Manjgaladze (2020), the process of children's integration in school is determined by five levels (public, systemic, institutional, interpersonal, intrapersonal). The family and the child's personal characteristics are undoubtedly important, but the aim of this article was to find criteria that could improve the inclusion of remigrant students, based on the first four levels. These factors, when correlated with each other, affect how the student will feel in the new situation.

Taking into account the theoretical literature on the support of remigrant children in Latvia and other countries, as well as analyzing the research conducted from the point of view of parents, teachers, and peers of these children, support criteria were created that would be necessary to facilitate the inclusion of remigrant children in Latvian schools. Those are:

- A fixed adaptation period when students are not evaluated
- An inclusive curriculum
- Motivating learning process and individual learning plans
- Students' participation in the learning process in setting and achieving goals
- Effective cooperation and communication between the school and parents
- Using differentiated, student-appropriate assessment of learning progress
- Improving the competence of teachers
- Student wellbeing– ensuring a safe and supportive environment at school
- Promotion of friendship, empathy and tolerance in educational institutions.

Some of these support criteria require a change in legislation, for example, in relation to the possibility of providing remigrant students with adaptation time and using a different assessment system / no grading, however most are within

the competence of the school, depending on what the overall school climate is, how the school community respects students' academic, personal and social differences, is able to create a safe, welcoming and motivating environment, or is ready and able to implement solutions that meet the educational needs of a articular student.

The following educational goals of Latvia, which are planned to be implemented by 2027, are encouraging and promising, and would probably also improve the inclusion of returning migrants and other newcomers in Latvian schools. It is indicated that in order to be able to implement individualized learning, changes in the educational organization are necessary, respecting the differentiation in the learning process and creating opportunities to follow the performance of each individual and their progress. Also, in terms of the evaluation of students' performance, the emphasis changes from "evaluation – goal" to "the need to identify the strengths and areas for improvement of each individual, to determine the main factors affecting growth and to offer the most effective solutions for further development". This Educational Development Plan states that the educational institution must provide an inclusive and emotionally safe learning environment, it must be an open and multifunctional place and environment for learning and personal development for different groups of learners, adapted to individual needs, abilities, skills and previous experience.

Conclusions

Migration is a complex phenomenon that forces students to overcome various challenges while integrating into school, so working with remigrant children requires an individual and sensitive approach that corresponds to each individual child.

Education in Latvia still does not meet the wishes and needs of all people. This indicates the shortcomings of the current education model in Latvia in order to ensure a meaningful learning process for all students.

Although the regulatory documents indicate that remigrant children have access to various types of learning support in schools, the results of the surveys show that often the students did not receive it or only partially received it.

The assessment system should gradually change, it should be a process of systematic empirical observation of students' progress and the challenges they face in learning and observing how they overcome them. Educators should clearly identify pedagogical goals that they can measure and that cannot be measured by assessment. In order to ensure a gentle transition to a new education system and not to cause psychological trauma, one of the possible solutions could be a one-year transition period for children of remigrating families, during which they do not receive an assessment at school.

It is important to create an individual learning plan and achievable goals for these students, providing the necessary support to achieve them by adapting the curriculum to each child's educational needs. Inclusion is also the use of different teaching methods so that all children are actively involved in the classroom.

A successful learning process is certainly important, but what parents indicate as difficulties in integrating into Latvian educational institutions is not so much related to the technical provision of learning, but the attitude of teachers and other students towards the remigrant-student. This means that schools need to find a way to develop friendship, empathy and mutual respect between all children, as well as between children in the classroom and the school's community as a whole.

The student's well-being is of great importance in the development of learning motivation and perception, in the formation of mutual relations with classmates, teachers and the surrounding world.

The school's connection with the parents of remigrant children can play an important role in ensuring a positive learning environment. Involvement of parents and informing them about the learning process, progress and difficulties (also related to children's well-being) would definitely promote the integration of students in Latvian schools.

It is necessary to invest in the education of teachers, because educators that are open to diversity, knowledgeable, creative and motivated with a sense of mission, are one of the prerequisites for schools to be able to successfully integrate different children.

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Social-Emotional Skills, Behavioural Problems and Learning Outcomes of Elementary School Children

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ABSTRACT

A topical question for teachers and parents is how to improve students' well-being and success at school, starting from the early stages of their education. Research shows that social-emotional competence is one of the key variables significantly impacting children's learning outcomes and that social-emotional learning contributes to higher learning outcomes and fewer behavioural problems, even in preschool. It is of great importance to obtain more evidence on the role of social-emotional skills in school adjustment, addressing this issue as early as possible to develop a deeper understanding of how to support children after their transition to elementary school. The current research aims to analyze relationships between social-emotional skills, behaviour problems and learning outcomes in a sample of elementary school students while also addressing gender differences in these relationships.

The sample consisted of 590 elementary school students aged 7–11 years (mean age 9.14, *SD* 1.38), 53.2% (314) of whom were boys and 46.8% (276) were girls. The teachers completed the Social Skills Improvement System Social-Emotional Learning brief scales, the Strengths and Difficulties Questionnaire, and a three-item questionnaire on their students' learning outcomes. Higher social-emotional skills in elementary school students had significant associations with lower levels of behavioural problems and higher levels of learning outcomes. Moreover, the results indicated that teachers reported significantly higher levels of social-emotional skills and learning outcomes and fewer behavioural problems amongst girls in contrast to boys. These findings highlight the necessity to develop social-emotional skills in facilitating learning outcomes and behaviour adjustment in elementary school children. Teachers' role as facilitators of social-emotional development must also be emphasized.

Keywords: behavioural problems, elementary school students, gender educational differences, learning outcomes, social-emotional skills, teachers' evaluations

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Introduction

Children need different skills to succeed in school, and for a long time, the focus has been on their intellectual or cognitive skills (Thompson, 2002). However, research in recent decades shows that social-emotional competence is another skill set that has a positive impact on students' ability to adapt and achieve better outcomes in school (Denham & Brown, 2010; Thompson, 2002) or later in life (Durlak et al., 2011). Social-emotional competence has been defined as the process where children or adults use the attitudes, knowledge and skills they have acquired to better understand the feelings and behaviours of themselves or others, to be empathic, deliberately set and achieve goals, and maintain healthy relationships with others (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2012). CASEL has also outlined five interconnected core competencies: self-awareness (e.g., being able to understand the relationships between emotions, thoughts and behaviours), self-management (e.g., being able to regulate one's thoughts, emotions and, in turn, behaviour in different settings), social awareness (e.g., being able to see things from other people's perspectives and being empathic to the other), relationship skills (e.g., being able to form healthy relationships with people around you) and responsible decision-making (e.g., being able to make conscious decisions considering the interests of both one's own and other people or groups) (CASEL, 2012).

Students who struggle to adjust to academic requirements often display behavioural and emotional difficulties (Cramer et al., 2019; Sawyer et al., 2015; White et al., 2013). There are several possible explanations for the occurrence of emotional or behavioural problems, such as adverse family circumstances (Raver & Knitzer, 2002), special educational needs (Menting et al., 2014) and inadequate social-emotional skills (Cramer et al., 2019; Durlak et al., 2011; Sawyer et al., 2015; West et al., 2001). In the literature, emotional, behavioural and social difficulties of children and teenagers are often viewed as internalizing or externalizing problems (Achenbach, 2009; Achenbach et al., 2016). The main focus on mood or emotions is distinctive of internalizing problems. Anxiety, symptoms of depression, difficulties in regulating one's emotions and social withdrawal are a few possible manifestations of internalizing difficulties (Achenbach, 2009; Birch & Ladd, 1998; Kring & Sloan, 2010). Externalizing problems are those that can be assessed from "outside". Verbal and physical aggression, a tendency to violate the rules and impulsive behaviour are examples of externalizing behaviour (Achenbach, 2009; Oland & Shaw, 2005). Nevertheless, it is important to stress that internalizing and externalizing problems are often intertwined and rarely seen as separate (Oland & Shaw, 2005).

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Even in elementary school, children often demonstrate difficulties in regulating their behaviour (Cramer et al., 2019), and this tendency has been linked with the development of internalizing and externalizing problems at a later age (Sawyer et al., 2015; White et al., 2013). Children who have lower levels of social-emotional skills often exhibit academic and behavioural difficulties at school (Denham, 2006). At school, learning outcomes are viewed as a result of the learning process – something that the student is expected to understand, know or do at the end of either the lesson, semester or school year (Adam, 2006). To achieve this goal, the student has to exhibit not only academic but also non-academic skills and behaviours that are considered as prompting (DiPerna et al., 2002), and this includes academic engagement and academic motivation. The former is a series of activities that facilitates the learning process (Greenwood et al., 1989; Salmela-Aro et al., 2016), and it involves emotional (a positive attitude towards school and one's part in it), cognitive (the motivation to continue to learn and regulate one's study process) and behavioural aspects (involvement in activities), and it can partially overlap with academic motivation (Eccles, 2016; Fredricks et al., 2004; Salmela-Aro et al., 2016). Academic engagement and motivation are seen as vitally important aspects of the learning process and academic performance (Af Ursin et al., 2020; Ladd & Dinella, 2009; Lei et al., 2018; Pietarinen et al., 2014; Wentzel & Miele, 2016).

The number of studies that confirms the role of social-emotional skills in enhancing students' attitudes towards school, learning outcomes and reducing mental health, emotional and/or behavioural problems continues to grow (Durlak et al., 2011; Greenberg et al., 2003; Ornaghi et al., 2014; Zins et al., 2004). Children with insufficiently developed social-emotional skills have a higher risk of displaying emotional and behavioural problems and lower levels of learning outcomes. There is evidence that children at risk of developing emotional, behavioural or academic difficulties are perceived more negatively by their teachers than by their peers (Montague & Rinaldi, 2001). Those children also exhibit greater difficulties in establishing and maintaining healthy and supportive relationships with their peers and teachers (Baker, 2006; Berry & O'Connor, 2010). As a result, their social and emotional functioning is negatively affected, and their learning outcomes worsen (Montague & Rinaldi, 2001). However, Carroll et al. (2020) observed that social-emotional skill training has the highest impact on children with emotional and behavioural difficulties, indicating that children in at-risk groups benefit the most from universal programmes (applied to everyone in the class).

Notably, gender differences have previously been found. For example, students, teachers and parents often rate social-emotional skills higher for girls than for boys (Romer et al., 2011). Emotional problems are also more common for girls (Zen et al., 2019); however, there are studies that do not report gender-related differences in internalazed behaviour (Holsen et al., 2008). Boys are also seen

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more often as having higher behavioural difficulties (Lei et al., 2018; Snyder et al., 2013). Still, the research shows that gender itself may not be the prognostic factor in the development of social-emotional skills (Carroll et al., 2020).

Previous findings indicate that an improvement in social-emotional skills enhances positive behaviours and learning outcomes and decreases emotional and behavioural difficulties, starting even from pre-school (Martinsone et al., 2022; Ornaghi et al., 2015; Wong et al., 2014; Zins et al., 2004). This is the first study exploring such relationships in elementary school children in Latvia as a social-emotional learning curriculum has only recently been developed and implemented in several Latvian schools. It is important to examine whether elementary school children in Latvia present similar relationship patterns between social-emotional skills, emotional and behavioural problems and learning outcomes as have been shown in other studies in order to offer evidence-based recommendations for educational policy regarding the integration of universal social-emotional learning in the national curriculum. The aforegoing literature review indicated contradictory results about gender differences, and thus an additional research question was raised.

The aim of this study is to investigate relationships between social-emotional skills, behavioural problems and learning outcomes among Latvian elementary school children, as well as to address possible gender differences. Two hypotheses and one research question were raised:

H1: Elementary school children with higher levels of social-emotional skills will present lower levels of emotional and behavioural problems and higher levels of learning outcomes according to their teachers.

H2: Higher social-emotional skills among elementary school children will be related to higher learning outcomes and lower levels of emotional and learning difficulties.

Q1: Are there gender differences in teacher-reported social-emotional skills, emotional and behavioural problems and learning outcomes of elementary school children?

Methodology

The research conducted in this paper is part of the international ERASMUS + project "Promoting mental health at schools" (PROMEHS). One of the main tasks of the project is to develop an evidence-based curriculum to promote social-emotional learning and resilience and prevent behavioural problems. Multiple schools from the Latvian region of Sigulda participated in this project. The present research uses only pre-test data for elementary school children, which were collected in October 2020. The sample comprises 590 elementary school students aged 7–11 years (Mage = 9.14; *SD* = 1.38), consisting of 314 (53.2%) boys and 276 (46.8%) girls. Teachers were the informants.

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The Ethics Committee for Humanities and Social Sciences Research Involving Human Participants of the University of Latvia gave their approval for the research on 12 December 2019. Children's parents were informed about the research and received informed consent forms to be signed if they approved their child's participation in the study. After receiving consent from parents, teachers filled in the surveys in paper format and placed them in closed envelopes, which were later collected by the researchers. Teachers filled in three surveys assessing students' social-emotional skills, behaviour difficulties and learning outcomes: the Social Skills Improvement System Social-Emotional Learning brief scales (SSIS SEL, Elliott et al., 2020), the Strengths and Difficulties Questionnaire (SDQ, Goodman, 1997), and three-item questionnaire on learning outcomes.

The SSIS SEL brief scales were used to measure children's social-emotional skills. The questionnaire consists of 20 statements that make up five subscales: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. The statements are measured using Likert scales from 0 to 3, where 0 is "never" and 3 is "almost always". The total score for each subscale can range from 0 to 12, and combining all the subscales provides a general measure of social-emotional skills ranging from 0 to 60. In the original tool, Cronbach's alpha is 0.91 (Elliot et al., 2020). The SSIS SEL brief scales were translated and adapted into Latvian by leading researchers on the Latvian PROMEHS team, and Cronbach's alpha of the validated version was 0.95 (Martinsone et al., 2022).

The SDQ was used to assess children's emotional and behavioural problems as reported by their teachers. The questionnaire consists of 25 statements comprising five subscales, where emotional symptoms, conduct problems, hyperactivity-inattention, and peer relationship problems are considered difficulties, and prosocial behaviour is considered a child's strength. In low-risk groups, the scores can be categorized into three scales, namely internalizing problems (emotional symptoms & peer relationship problems), externalizing problems (conduct problems & hyperactivity-inattention) and prosocial behaviour (Goodman et al., 2010). The questions are measured on a 3-point Likert scale, where 0 is "disagree", 1 is "somewhat agree", and 2 is "certainly agree". Each subscale rating can range from 0 to 10, and the overall difficulties assessment can range from 0 to 40 points. The internalizing and externalizing scales can range from 0 to 20, and the prosocial behaviour rating can range from 0 to 10. Cronbach's alpha of the previously validated Latvian version of SDQ is 0.74 (Līvena, 2014),

The learning outcomes of children were assessed with a three-statement questionnaire. Teachers were asked to rate students' academic engagement, academic motivation, and academic performance on a 5-point Likert scale, where 0 is "very weak" and 4 is "very good". The higher the rating, the higher the learning outcomes. Overall, the score could range from 0 to 12. Pairwise correlations of these questions surpassed 84%, and it was decided to combine the items in one scale.

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The statistical analysis of the data was done using the Statistical Package for the Social Sciences (SPSS) program, and descriptive and inferential statistical methods were used.

Results

Descriptive statistics (see Table 1) show that all questionnaires' internal consistency measures are good enough for statistical analysis. One statement was excluded from the self-awareness scale to achieve an acceptable level of internal consistency. A Kolmogorov-Smirnov test showed that non-parametric tests had to be used for the analysis of data.

Table 1. Descriptive Statistics for SSIS SEL Brief Scales, SDQ and Learning Outcomes (*n* = 590)

	M	*SD*	*A*
Overall difficulties	9.21	6.07	0.85
Emotional symptoms	2.02	1.97	0.74
Conduct problems	1.46	1.89	0.76
Hyperactivity-inattention	3.50	2.79	0.85
Peer relationship problems	2.22	1.84	0.60
Prosocial behaviour	6.85	2.23	0.79
Internalizing problems	4.24	3.21	0.75
Externalizing problems	4.96	4.28	0.87
Social-emotional skills	39.26	9.39	0.93
Self-awareness	5.78	1.79	0.78
Self-management	7.91	2.36	0.76
Social awareness	8.16	2.30	0.80
Relationship skills	8.42	2.14	0.73
Responsible decision-making	8.89	2.48	0.85
Learning outcomes	8.61	2.62	0.92

It was hypothesized that elementary school children with higher levels of social-emotional skills would have lower levels of behavioural and emotional difficulties and higher levels of learning outcomes. To confirm or reject the study's first hypothesis, Spearman's correlation coefficient was used to assess the data (see Table 2). The results indicate that social-emotional skills are significantly and negatively associated with behavioural and emotional difficulties and positively associated with learning outcomes.

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Elementary school children's difficulties were also observed using internalizing and externalizing problem scales and the prosocial behavioural scale (see Table 3). Correlations between the variables show that internalizing and externalizing problems are negatively associated with social-emotional skills and learning outcomes. Prosocial behaviour, on the other hand, is positively correlated with all social-emotional competencies and learning outcomes.

Table 2. Spearman Correlations for Social-Emotional Skills, Learning Outcomes, and Behavioural Problems ($n = 590$)

Variable	Overall difficulties	Emotional symptoms	Conduct problems	Hyperactivity-inattention	Peer relat. problems	Learning outcomes
Social-emotional skills	−.75**	−.23**	−.64**	−.68**	−.48**	.66**
Self-awareness	−.67**	−.28**	−.51**	−.58**	−.44**	.59**
Self-management	−.70**	−.15**	−.67**	−.77**	−.31**	.59**
Social awareness	−.50**	−.10*	−.45**	−.40**	−.38**	.41**
Relationship skills	−.64**	−.28**	−.47**	−.47**	−.54**	.53**
Responsible decision-making	−.70**	−.17**	−.65**	−.69**	−.42**	.69**
Learning outcomes	−.64**	−.25**	−.44**	−.66**	−.36**	–

*p < 0.05; ** p < 0.01

Table 3. Spearman Correlations for Social-Emotional Skills, Learning Outcomes, Internalizing and Externalizing Problems, and Prosocial Behaviour ($n = 590$)

Variable	Internalizing problems	Externalizing problems	Prosocial behaviour
Social-emotional skills	−.43**	−.73**	.71**
Self-awareness	−.44**	−.61**	.57**
Self-management	−.28**	−.80**	.41**
Social awareness	−.29**	−.47**	.80**
Relationship skills	−.49**	−.52**	.66**
Responsible decision-making	−.35**	−.74**	.62**
Learning outcomes	−.37**	−.65**	.41**

** p < 0.01

To address the second hypothesis, according to which higher social-emotional skills among elementary school students will be related to lower levels of emotional and behavioural problems and higher levels of learning outcomes, a one-factor regression analysis was used (see Tables 4 and 5).

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Table 4. One-Factor Regression Analysis with Behavioural and Emotional Problems as the Dependent Variable ($n = 590$)

Parameter	B	B Std. Error	B	t
Social-emotional skills	−0.44	0.02	−0.73	−25.31***

$R^2 = 0.53$; ***p ‹ 0.001

Table 5. One-Factor Regression Analysis with Learning Outcomes as the Dependent Variable ($n = 590$)

Parameter	B	B Std. Error	β	t
Social-emotional skills	0.18	0.01	0.66	21.29***

$R^2 = 0.44$; ***p ‹ 0.001

Social-emotional skills significantly predicted the elementary school children's behavioural and emotional difficulties, and this model explained 53% of their variations. As the score for social and emotional skills increases by 1 point, behavioural and emotional problems will decrease by 0.44 points.

Social-emotional skills explain 44% of the results regarding the learning outcomes of elementary school children. When increasing the social-emotional skill level by 1 point, learning outcomes will increase by 0.18 points.

Table 6. Social-Emotional Skills, Behavioural and Emotional Problems and Learning Outcomes by Gender

	Gender				
	Girls ($n = 276$)		Boys ($n = 314$)		
	M	SD	M	SD	U
Overall difficulties	7.62	5.20	10.61	6.43	31285.5***
Emotional symptoms	2.08	1.90	1.97	2.03	40642.00
Conduct problems	0.89	1.44	1.95	2.10	28915.00***
Hyperactivity-inattention	2.57	2.43	4.32	2.83	27558.50***
Peer relationship problems	2.07	1.78	2.36	1.89	39473.00
Prosocial behaviour	7.64	1.93	6.15	2.25	26437.50***
Internalizing problems	4.14	3.14	4.33	3.27	42163.00
Externalizing problems	3.47	3.47	6.28	4.50	26281.50***
Social-emotional skills	42.93	8.34	36.02	9.07	23679.50***
Self-awareness	6.31	1.67	5.32	1.77	28612.00***
Self-management	8.71	2.18	7.21	2.29	26821.50***
Social awareness	9.03	2.13	7.40	2.17	25536.50***

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Relationship skills	9.09	1.96	7.82	2.12	27945.00***
Responsible decision-making	9.81	2.18	8.09	2.46	25241.50***
Learning outcomes	9.20	2.45	8.09	2.65	32522.00***
Performance	2.98	0.91	2.70	0.93	32482.50***
Motivation	3.06	0.90	2.64	0.97	32581.50***
Engagement	3.16	0.86	2.75	0.93	35807.50***

*** $p < 0.001$

To answer the question of whether there are gender differences relating to elementary school children's social-emotional skills, emotional and behavioural problems and learning outcomes, Mann-Whitney tests for two independent groups were used (see Table 6). The results indicate that there are statistically significant differences between the gender groups in almost all variables. Teachers reported that boys had higher levels of behavioural problems than girls and lower levels of social-emotional skills and learning outcomes. There were no gender differences for internalizing problems.

Discussion

The aim of this study was to explore relationships between the social-emotional skills, behavioural and emotional problems, and learning outcomes of elementary school children. An additional question about gender differences within the constructs was raised. The results of this research indicate that overall social-emotional competence and each skill separately are positively related to learning outcomes and negatively associated with behavioural and emotional problems. Elementary school children who have better developed social-emotional skills have higher levels of learning outcomes and fewer behavioural and emotional problems. Accordingly, those with less developed social-emotional skills will show greater internalizing and externalizing problems and lower levels of learning outcomes. These results are in line with other studies (Alzahrani et al., 2019; Durlak et al., 2011; Elias et al., 1997; Greenberg et al., 2003; Martinsone et al., 2022; Osher et al., 2016; Snyder et al., 2009; Zins et al., 2004). Additionally, social-emotional skills had positive associations with the prosocial behaviour of preschool children. This reinforces the fact that an increase in social-emotional skill levels not only decreases emotional and behavioural problems but also increases prosocial behaviour. Other studies have shown that higher levels of social-emotional skills help to lower externalizing problems by improving students' ability to regulate their own emotions (Ağırkan & Ergene, 2022; Ronen et al., 2007) and, specifically, insufficient self-management was closely related to externalizing problems. Other studies also indicate that self-management is closely related to internalizing problems. In general, the

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higher the level of social-emotional skills, the lower the internalizing and externalizing behaviour difficulties (Durlak et al., 2011; Elias et al., 1997).

This study emphasizes that higher levels of behavioural and emotional problems are associated with lower levels of learning outcomes, including performance, motivation and engagement. Similar results have been reported by other researchers (Graziano et al., 2007; Hamre & Pianta, 2001; Spilt et al., 2012; Zee & Roorda, 2018), and thus it can be concluded that children with emotional and behavioural problems, even during their first years of elementary school, consequently have more difficulties with achieving better academic outcomes. Over time, their lack of knowledge and skills can lead to greater behavioural difficulties that can adversely affect their relationships with peers and teachers and therefore foster a greater drop-out risk from school (Wang et al., 2015).

It also was hypothesized that higher levels of social-emotional skills among elementary school students would be related to higher learning outcomes and lower emotional and behavioural problems. Data from this research confirm this hypothesis and complement other studies (Alzahrani et al., 2019; Durlak et al., 2011; Elias et al., 1997; Greenberg et al., 2003; Osher et al., 2017; Snyder et al., 2009; Zins et al., 2004), confirming that improvement in social-emotional skills is an effective way to decrease behavioural problems and increase both learning outcomes and prosocial behaviour.

Finally, gender differences were examined in view of the lack of consistent evidence in previous research on this aspect (Holsen et al., 2008; Lei et al., 2018; Romer et al., 2011; Ronen et al., 2007; Spilt et al., 2012). The findings indicate that there are significant differences between the gender groups in social-emotional skills, learning outcomes and behavioural problems. These results match those of other studies (Lei et al., 2018; Snyder et al., 2013), where girls are observed as having higher levels of social-emotional skills, better learning outcomes, and fewer behavioural problems. However, the present findings do not indicate that girls have greater emotional or internalizing problems than boys, as has sometimes been reported (Zen et al., 2019). It should be noted that only those scales of behavioural difficulties that indicate externalizing problems show a significant difference between genders. There are several possible explanations why boys have lower levels of social-emotional skills than girls, one of which points to the teaching methods of educators (Sanchez-Nunez et al., 2008), and another depends on the role played by society in general. We could speculate that in Latvia, schools are more supportive of girls than boys due to requesting more self-regulation and independence from boys even in the early stages of their education.

This study has shown that an increase in social-emotional skills is related to a decrease in emotional and behavioural problems and significantly increases the learning outcomes of elementary school children. Therefore, every school should consider implementing social-emotional learning as a way to foster the

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social-emotional development of their students. Research shows that universal programmes (implemented for everyone in the class) targeting children at risk are effective in improving emotional and behavioural problems (Carroll et al., 2020). This may be the most effective way to support every child in elementary classes while also improving children's social-emotional skills, behavioural adjustment and learning outcomes.

Conclusions

The results of this study indicate that higher social-emotional skills are associated with better learning outcomes and lower levels of behavioural and emotional difficulties among elementary school children and vice versa – students with lower levels of social-emotional skills have greater emotional and behavioural difficulties and lower levels of learning outcomes. Thus, the first hypothesis, according to which social-emotional skills are positively associated with learning outcomes and negatively associated with emotional and behavioural problems, was supported.

The second hypothesis that higher social-emotional skills predict a decrease in behavioural and emotional problems and an increase in learning outcomes was also confirmed. A 53% improvement in social-emotional skills explains the decrease in emotional and behavioural problems, and a 44% improvement explains the increase in learning outcomes. It is expected that emotional and behavioural problems will marginally decrease by improving students' social-emotional skills. Likewise, an improvement in their social-emotional skills is associated with better results in learning outcomes.

Regarding the gender differences, it was found in all variables (with the exception of internalizing behaviour) that boys were assessed as having lower social-emotional skills and lower learning outcomes and significantly greater behavioural problems than girls.

These findings support the importance of the development of social-emotional competence as a prerequisite for improving elementary school children's learning outcomes and prosocial behaviour while also significantly decreasing emotional and behavioural problems. Gender differences indicate that boys could be in a vulnerable position even from the early days of school since their social-emotional skills and learning outcomes are assessed as being lower than those of girls. According to teachers' reports, the emotional and behavioural difficulties of boys are greater than girls of the same age. These findings should prompt a necessary discussion of teachers' role in developing relationships with and among students and providing support for all of them, including those with lower levels of social-emotional skills or those struggling with emotional or behavioural problems.

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Intervention in Speech Therapy in Reducing Phonological Insufficiency in Preschool Children

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Abstract

This research examines the possibilities of promoting the development of phonemic perception among children of preschool age with phonemic insufficiency. Phonemic insufficiency is a complex and difficult disorder; in such cases, therefore, a specialist carries out an in-depth evaluation of a child's speech development and language acquisition, which allows them to determine a precise program of speech therapy using the necessary correction methods and techniques, including games.

The aim of the present study is first, to investigate theoretically and evaluate practically the possibilities of promoting phonological perception in children with phonological insufficiency using a collection of games created by the author; and second, to gather expert opinion to substantiate the efficiency of these games in interventions.

The research was carried out using a literature review, speech and language therapist survey, an analysis of expert opinion of the developed games, and speech therapy sessions to improve phonological perception in pre-school children with phonological insufficiency.

Results. Forty-nine children aged five and six years old with phonological insufficiency were involved in the empirical stage of the study, namely speech therapy sessions over a period of six months. An initial and a follow-up assessment of phonological perception were carried out and showed dynamic growth for all participants. The results of the speech and language therapist survey revealed that speech therapists included the presented games in interventions and viewed them as relevant and effective instruments to reduce phonological insufficiency. The comments by experts selected from among the survey respondents on the games created by the author indicate that they are relevant and effective instruments in phonological insufficiency reduction.

Keywords: game, intervention, preschool children, phonological insufficiency, phonological awareness

Introduction

Language is a cultural heritage and the means of human communication. Every individual learns the laws of language usage in communication with their peers; thus, the cultural continuity of a language is respected so it can be acquired, preserved, and transmitted to future generations (Lūse et al., 2012; Montessori, 1964; Montesori, 2019; Rūķe-Draviņa, 1992). Language is a complicated sign system and a tool for the expression of thinking, thoughts, feelings, and will in communication with others (Lūse et al., 2012). Language use takes two forms, namely code and speech, and speech is implemented in three ways: sign language, spoken language, and written language, each of which has both communicative and expressive characteristics (Aivars et al., 1999).

Speech and language cannot be separated. Speech is a form of cognition and communication implemented with the help of language. Hence, a hierarchy of language elements must be respected in the process of language learning: phonetics (sound articulation and acoustics), morphology (structure of morphemes and functions, grammatical categories, creation of grammatical forms), and syntax (combination of words, sentences, the grammatical structure of sentences, and the laws of their creation) (Bušs et al., 2007; Miltiņa & Skribanovska, 2017). Berman (2008) also states that for a child to become a proficient speaker, they must follow the sequential stages of language learning, which takes a long time.

Language skills develop gradually in children and are based on imitation and exercise in practical activities, including playing different games. Playing ensures physical health, liveliness of mind, and body part movement, leading to a child's full development (Grudulis et al., 1632/1992). For children of preschool age, games offer shelter from unknown situations and support for achievements and successes (Petrovska et al., 2013), favorably affecting comprehensive personality development.

Methodology

This study is based on a review and analysis of the theoretical literature, which reveals the problem and establishes the relevance of the study. A review of the theoretical literature substantiates the importance of thoroughly developed phonemic perception in the speech development and language acquisition of preschool children. Furthermore, a practical study of improving the development of phonemic perception in preschool children with phonological insufficiency was carried out. Criteria, indicators, and assessment levels for phonemic perception assessment were established by the research author. The study included 49 children aged five to six years old who were diagnosed with phonological insufficiency. The practical study administered a questionnaire to practicing speech and language therapists; thus, opinions were collected from experts as follows:

1) the opinion of speech therapists in preschool educational institutions on the methods, techniques, and methodological materials most often included in interventions (including games);
2) evaluation by experts selected from among the speech therapists of the set of games developed by the author; and 3) the effectiveness of the games in interventions in terms of reducing phonological insufficiency.

Results

The opinions expressed in the theoretical literature show that an increasing number of scientists are turning their attention to children's speech development and language acquisition legality, as well as their development and acquisition legality problems. Experts in this area explain that speech development and language learning develop most rapidly during the first three years of a child's life, when the brain is particularly open to picking up and learning a language (Ahutina & Pylajeva, 2008; Astapov, 2010; Bondar, 2012; Tomele, 2022; Volodin & Shklovskij, 2014; Weyandt, 2006).

Data from the Latvian National Statistical Office about the state of children's health (in the context of a study of speech and language disorders) suggest that the relevant numbers are not positive:

- For the 2018–2019 school year, 2455 of 4102 children in preschool educational institutions were diagnosed with speech and language development disorders (Central Statistical Bureau [CSB], 2020).
- The *Latvian Statistical Yearbook 2020,* published in 2021, presents data regarding the number of persons registered with disabilities at the end of 2019; however, this breakdown did not separate children with speech development and language learning disabilities from others (CSB, 2021).
- The edition of the *Latvian Statistical Yearbook* published in 2022 did not present data on speech development and language learning disability (CSB, 2022).
- The fact that an increasing number of children have speech and language disorders is confirmed by a Dutch study, which states that in the timeframe 2010 to 2013, approximately 43% of children aged four to seven were found to have development disorders (Wiefferink et al., 2020).

In Latvia, the competence approach is applied to learning content in all education stages and entails learning by delving into the essence of the subject and understanding the interconnections between the activities offered so students can use their newly learned knowledge in unknown situations. School 2030 [Skola 2030] documentation and the curriculum for preschool education both offer methodological suggestions for educators about learning content and approach implementation. Moreover, they clearly define achievable results in the area of

language, for which three content units have been created: communication in context, text and text creation, and language structure (Miesniece, n.d.; Namsone et al., n.d.); see Table 1.

The reflected achievable results (see Table 1) provisionally imply that the highest achievable result in the language learning area at the end of preschool is a child who pronounces all speech sounds correctly and knows how to differentiate them, is able to analyze the composition of a word, and can represent a sound with a specific graphic image in reading and writing activities.

Table 1. Formulation of learning outcomes to be achieved at pre-primary stage 3 (5–6 years of age) (School 2030)

	Expected results		
	Communication in context	Text and text creation	Language structure
Key Stage 3 (age 5–6) (Expected Results (ER) set for a child at full age 6 – by the start of primary education)	Explains why people use language to communicate.	Listens to the text, names the characters, retells the events, makes up a sequel.	Identifies and names the speech sounds.
	Asks about the unclear and answers specific questions.	Can talk about what have seen, heard, experienced, and their emotions and actions in a clear and sequential way.	Pronounces all speech sounds correctly.
	Participates in the conversation without interrupting the speaker.		Denotes speech sound by the corresponding letter.
	Uses speech intonations to express emotions appropriate to the communication situation.		Reads the words and understands what is read.
			Writes written letters in an unlimited space.

Likewise, the child should have an understanding of language usage legalities in each dialog context, know how to listen in others, and be able to express their own opinion. Children with phonological insufficiency can achieve this result in primary school on condition that a speech therapy intervention is carried out.

In the process of speech development and language learning among children of preschool age, great attention must be paid to both speech sound learning and phonematic process development. Fully developed phonematic processes help a person understand, react to, and concentrate on the different noises and sounds of the outside world (both non-language and language sounds), as well as decide from which side such noises are heard and distinguish among their sources (Chu & Syu, 2018; Constantin, 2021; Kramiņš, 2005; Kramiņš, 2016; Tūbele & Lūse, 2012; Šēnveilers & Ptoks, 2001).

Speech development and/or language learning disorders are among the development disorders most often encountered in children. Speech development and language learning disorders can affect one or more language areas, namely phonetic, morphological, and/or syntactic (Adams, 1990; Adams et al., 2012; Hempenstall, 2016; Miltiņa, 2008; Markus, 2007; Tūbele & Lūse, 2012).

Phonematic process development is formed and developed at a preschool age. Children's auditory attention and perception of noise and speech sound develop gradually; hence, having an example of correct speech and language is one of the most important prerequisites to advance correct speech development and language learning (Zinovjeva, 2018; Buldur & Gokkus, 2021; Dalva et al., 2017; Ferraz et al., 2015; Miltiņa, 2005; Murphy et al., 2015; Tūbele, 2008).

In order to advance development of phonematic processes, attention is paid to recognition and differentiation of speech sounds, perceiving and repeating rhythm, and enhancing verbal memory, as these components are closely related with reading skills. For children with inferior phonematic process development, difficulties arise in tasks such as missing sound determination and repeating non-words (Melby-Lervåg et al., 2012; Rispens & Been, 2007).

Intervention in speech therapy, explained as set of measures of pedagogical, psychological, and speech therapy, can reduce and/or prevent a child's physical and psychological development and speech disorder if carried out by a speech therapist (Abry et al., 2015; Tūbele, 2019; Thomas-Stonell et al., 2013).

Speech therapists use anamnesis acquisition to better understand children's speech and language disorders. They determine speech therapy statement and plan intervention actions with the goal of reducing speech disorder displays. Planning and implementing an intervention are seen as a complex and consecutive set of actions (Barberena et al., 2014; Brosseau-Lapréa & Roepkea, 2019; Mezzomo et al., 2014; Miltiņa, 2005, 61; Snowling & Hulme, 2012; Tūbele, 2019).

Great attention should be paid when the result of the intervention is received. The results need to be fixed and analyzed to evaluate dynamic changes and to evaluate the efficiency of the methods and techniques used in the intervention carried out to reduce the disorder (Baker et al., 2022).

An intervention is structured as follows. First, the anamnesis is received, after which a child's speech development is evaluated, an intervention is carried out, the child's speech development is evaluated, and the obtained results are analyzed; secondly, the feasibility and difficulty level of corrective work are assessed considering the child's experience, abilities, and skills (Baker et al., 2022; Vilka, 2021). Children gain experience in different activities, including playing different games. A game makes children laugh, fantasize, create, think about and express their wishes, rejoice, learn, and relax (Dzintere, 2000, 30; Lundberga, 2007). A game is a form of activity which is practiced from early childhood until the last years of one's life (Elkonin, 2008; Gottfried, 1985; Leontjev, 1996; Levy, 1978; Lieberman, 2007).

Table 2. The characteristics of a game as expressed in the theoretical framework

Authors	Characteristics of the game
Schiller (1794)	A game is an engine of personal development.
Froebel (1887)	Playing games forms experience.
Groos (1901)	A person plays to learn the skills required in life.
Spencer (1920)	A game is a pedagogical activity which gradually prepares a person for work life.
Huizinga (1949)	A game is a targeted and meaningful activity successfully implemented for development in the cognitive, physical, and social spheres.
Piaget (1951)	Playing games ensures a child's intellectual development.
Montessori (1964)	Playing games ensures a child obtains knowledge and skills.
Vygotsky (1966)	A game is preschool child's leading activity in the development of imagination, speech and language, mental ability, and logical thinking.
Bruner (1983)	A game has a therapeutic effect and ensures children's communicative skills.
Broström (1996)	While playing games, a child learns to plan their actions, overcome problem situations, and predict achievable results.
Cook (2000)	A game is an activity which is regulated by rules and has a competitive spirit.
Rubinshtein (2002)	A game motivates a child's knowledge intake on various activities, academic and practical.
Garris et al. (2002)	A game is set in a specific place and time period, with precise rules that everyone must follow.
Elkonin (2008)	A game is an uninterrupted action in a child's psychic process development.
Eden (2008)	The thematic content of a game expands the child's assumptions about the laws of the world.
Leontyev (2009)	In an action of a game, a child learns to understand the rules of life.
Klopfer et al. (2009)	The participants in a game use previous and gain new knowledge and skills, thus increasing the probability of winning.
Whitton (2010)	Following the rules of a game makes it more likely that players will achieve the goal.
Salmina & Tihanova (2011)	The interactive nature of a game promotes communication and cooperation skills.
Saracho (2012)	Playing a game promotes a child's curiosity and activates listening and speech skills.
Petrovska et al. (2013)	A game lets a child gain personal experience of what is good and bad, develop new skills and knowledge, and strengthen existing ones.

Table 1. Continued

Wood (2013)	A game is a speech therapist-structured learning activity.
Smith & Hart (2014)	Children need to play games to gain knowledge.
Theobald et al. (2015)	New knowledge is gained from structured play activities.
Kumari et al. (2016)	Energetic games imitating different situations promote cooperation skills.
Ke (2016)	A game is based on a set of structured actions and an achievable result.
Edwards (2017)	In a game, a child learns from their mistakes.
Karagiorgas & Niemann (2017)	A game is a gradual transition from playful activity to a learning activity.
del Moral et al. (2018)	The action of a game reduces anxiety, and the exciting content promotes communication skills.
Boghian et al. (2019)	A game possesses elasticity; multiple players can become involved with different levels of knowledge.
Kirstavridou et al. (2020)	The different levels of a game ensure a qualitative and gradual gain of knowledge.
Bay (2020)	A game teaches players to use newly learned knowledge and skills in action.

The descriptions of a game presented in the theoretical framework shown in Table 2 allow the most usual characteristics to be identified as follows:

- The game involves emotion and a desired tension, which is based on uncertainty, instability, chance, luck, or misfortune, because to achieve the goal of the game, effort must be made (attention, concentration, thinking, verbal expression, etc.).
- Every game has rules that dictate its internal power. The rules of the game are followed mandatorily; as soon as they are broken, progress in and the end result of the game become doubtful, and the hoped-for result is not achievable.
- The game is an adult-structured action, and it is created deliberately by putting up a specific goal and determining sequential tasks to achieve it.
- The game contains a problem situation and a strategy to solve it, because there is a chance to win, but also to lose. All characteristic features are focused on specific learning and/or strengthening of knowledge and skills.

When including games in an intervention, a speech therapist should anticipate possible problems which could cause the child to be unable to carry out the constant tasks the game requires. In regard to such problems, a speech therapist should create multiple variations of a game, with different difficulty levels, to increase its usage in interventions (Vilka, 2021).

The empirical part of the present study was carried out in order to:

1) find out the opinion of speech therapists in preschool educational institutions on what methods, techniques, and methodological materials are most often included in interventions (including games);
2) obtain an expert evaluation of the set of games developed by the author;
3) test the effectiveness of the games in an intervention to reduce phonological insufficiency.

The following data extraction methods were used in the study: (1) survey method – questionnaire; (2) expert opinion method – questionnaire; and (3) speech therapy evaluation of children.

Speech therapists of general educational preschool educational institutes were chosen as the target respondents. The research author created an anonymous survey which was published on the Facebook.com group created by the Latvian Speech Therapist Association. The survey included parameters such as work experience, age of the children being worked on, number of children with speech and language disorders, number and duration of lessons, and methods used in the corrective development process. Eighty-eight Latvian general education preschool speech therapists participated in this research.

The survey of speech therapists of preschool educational institutions had 12 questions, both closed and open-ended, which aimed to clarify: (1) which speech therapy methods and methodological materials are most often used in interventions; and (2) whether speech therapy lessons contain games meant to reduce phonological insufficiency and which criteria the games must meet to promote phonological development.

As part of the explanation of methods and methodological materials used by a speech therapist in an intervention (see Fig. 1), it should be noted that six work methods are most frequently used.
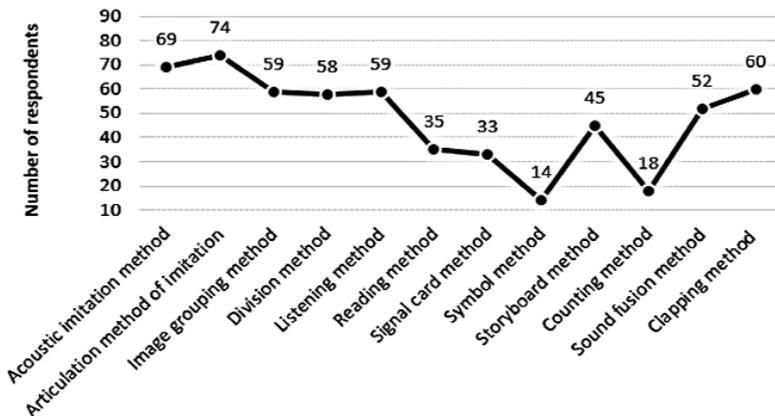

Figure 1. The most common speech and language therapy methods used in interventions

Seventy-four speech therapists use *the method of imitation according to the articular principle* as a primary work method. The second most often-used work method (69 speech therapists) is *the method of imitation according to the acoustical principle;* the third most often-used is indicated as *the clapping method* (60 speech therapists); the fourth and fifth most often-used are *image grouping* and *listening* (both 59 speech therapists), while the sixth – *sound fusion* – is used by 58 speech therapists.

Every single speech therapist's work method is important; however, to reduce phonological insufficiency, it is important that an intervention contains those work methods that activate a child's cognitive processes. Thus, children in speech therapy sessions are not only imitators, but also active thinkers and cooperation partners.

In Figure 2, the answers given by speech therapists indicate that the following materials are used in interventions: games (85 speech therapists), image cards (83 speech therapists), and different support materials (e.g., reminders, folding alphabets, small items and toys) (42 speech therapists). It should be noted that these kinds of methodological materials are often included in interventions as support materials, which help in the reduction of phonological insufficiency.
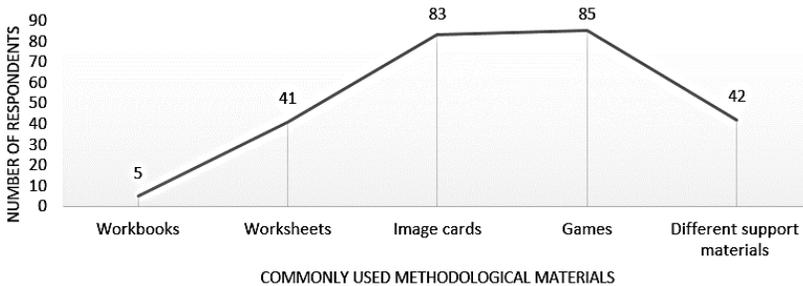

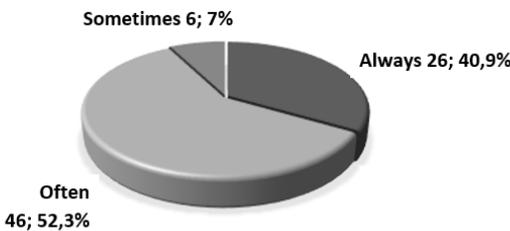*Figure 2.* Methodological materials commonly used in the intervention

Figure 3. Including games in interventions

It can be seen from Figure 3 that 26 (40.9%) speech therapists *always* use games, meaning they do so in every speech therapy session; 46 (52.3%) speech therapists *often* include games in speech therapy sessions; and six (7%) speech therapists *sometimes* use games in speech therapy sessions. However the option *rarely* was not chosen by a single speech therapist. The given answers indicate that games are included in interventions.

Speech therapists were also asked to note and evaluate the criteria to be taken into account when choosing a game to ensure it is appropriate and effective in an intervention aimed at phonological insufficiency reduction.

As can be seen in Figure 4, speech therapists evaluated the following criteria highest (with a rating of "fully agree" and "agree"):

- *Precisely formulated goal of the game and certain relevant tasks*: fully agree – 56 speech therapists; agree – 29 speech therapists.
- *Visual formation is coordinated with intervention implementation*: fully agree – 53 speech therapists; agree – 32 speech therapists;
- *Progress in speech experience (repeating, strengthening, acquisition of new knowledge and skills*: fully agree – 54 speech therapists; agree – 32 speech therapists;
- *Practicing the language through different skills (listening, text creation, reading, writing)*: fully agree – 55 speech therapists; agree – 32 speech therapists;
- *Successful intervention method along the usual methods*: fully agree – 57 speech therapists; agree – 28 speech therapists.
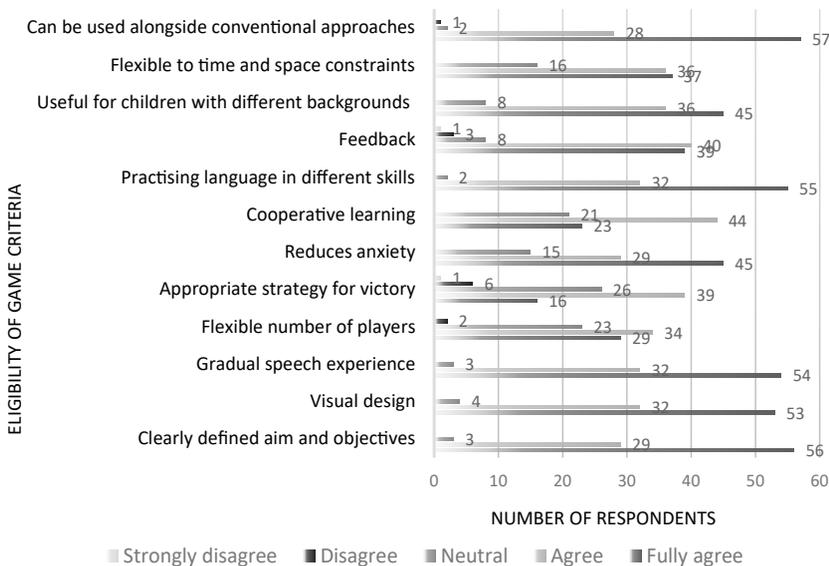

Figure 4. *Eligibility of game criteria*

From an analysis of the answers provided by speech therapists to the survey questions, it can be concluded that speech therapists include games in interventions and view them as a relevant and effective instrument to reduce phonological insufficiency. The answers provided by speech therapists also show that when choosing to include games in interventions they think about how likely they are to achieve the wished result; check that the games have a good visual presentation, a precisely formulated goal, and appropriate tasks to be carried out; and consider whether they can be used in diverse forms to promote linguistic ways of working in speech therapy sessions, which are organized both individually and as group/sub-group classes.

During the selection of experts, the researcher talking to the candidates personally and gave them information about the study goals, progress, data processing, and other aspects of informed consent and provided each individual expert with an encrypted code as identity.

The following parameters were considered in the selection of experts: position, pedagogical seniority, scientific degree and title, and research seniority; whether the individuals had published on the question being assessed; whether their opinion about the question being assessed was explained with reference to research in the field, speech therapy experience, or intuition; and how much the expert understood the assessed question, with the following range of options: all pedagogical and special aspects are known for the main assessment question; most of the pedagogical and special aspects are known for the assessment question; and some of the pedagogical and special aspects are known for the assessment question (Albrehta, 1999).

The expert questionnaire was implemented to evaluate the game collection created by the author and for the experts to give their own opinions about whether it can be used to reduce phonological insufficiency. The collection contains seven games: "Find the same one, name it and place it!," "Circus," "Circus – 1," "Circus – 2," "Circus – 3," "Memory game," and "Find me a name!" Support material has been created for every game.

For experts to be able to provide an objective evaluation of the games, specific criteria were set for each one. Experts were sent the game collection and a methodological explanation of it and were asked to evaluate each game's specified criteria on a 5-point scale (Albrehta, 1998): 5 – no complaints, 4 – few complaints, 3 – there are complaints, but overall it is acceptable, 2 – there are serious complaints, the task must be modified, and 1 – the task is not acceptable as it is. They were also asked to provide comments if the evaluation of any criterion was 4 points or lower so corrections and clarifications could be made to the game collection (due to restrictions on the length of the article, additional materials are not included). The maximum score for each criterion of the game was 5 points, and the minimum was 1 point; the average maximum available

assessment was 5 points, and the game collection maximum available assessment was 5 points.

For each expert involved in the study, a code was formulated as follows: initials of name and surname/years of work experience (e.g., Ilze Vilka, 20 years = IV/20).

Figure 5 presents the experts' opinion of the game collection in general. Six experts rated it with the highest possible score, of 5 points, and four gave the following scores: AR/17 – 4,9841 points, DV/25 – 4.9821 points, ZS/7 – 4,9841 points, and IS/18 – 48.21 points, from a maximum available of 5.
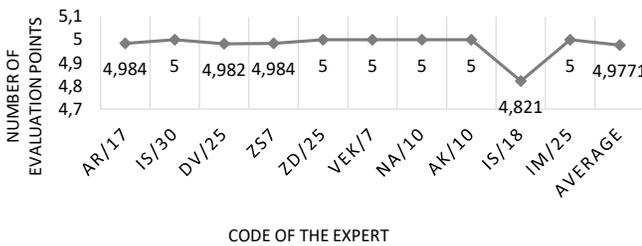
Figure 5. Overall expert evaluation of the game set

The comments of experts AR/17, DV/25, ZS/7, and IS/18 are seen as suggestions for the game collection's visual appearance and to improve its effectiveness in use. Suggestions and comments made by the experts about the game collection are presented below.

Suggestions:

IS/18	Make the image correspond more clearly to the pronunciation of the
ZS/7	word.
	Review the label usage in the game "Find my word!"
	The support material could be in smaller units.
DV/25	Preferably, the visual material of the game should be made up of photo-
AR/17	graphs, which are closer to reality.

Comments:

NA/10	It is good that children can choose which image to start the game with. For harder levels, children should be allowed to choose images based on serial numbers.
	A speech therapist has the option to adjust the game speed according to a child's development level.
	The images chosen for the child are both recognizable and clearly understood.

IS/18   The addition of new elements (syllable determination) in the traditional game "Circus" increased the child's interest in the game. As the words with the syllables to be determined were analyzed before the game started, during the game it was easier to reach the goal, because no additional support or explanation was needed for many children. The skill of correctly working out the syllable count in the given images and inserting these images in the map without any help boosted a child's self-esteem and contributed to the understanding of the concept of "syllable," which was expressed in joy at the work they achieved. The traditional game "Circus" offered a non-coerced way of including a phonematic analysis learning element to create a better understanding of phonematic analysis in children by splitting a word into syllables. It also promoted understanding of short and long vowels.

ZD/25   Implementation of different elements (counting of syllables and sounds in a word) in the traditional game "Circus" contributed to a child's interest in the game, even though the progress of the game, compared to the two previous ones, was more difficult. The speech therapist observed that if these game elements are used more often in interventions, it would contribute to children having a more sustainable understanding of the concepts of word, syllable, and sound.

The different difficulty levels and mixed tasks in the game collection build and promote a strong understanding of the concepts, namely sounds, syllables, and words. Likewise, the opinion of the experts suggests that these or similar games could be used not only in speech and language therapies, but also in group activities in educational institutions as long as the child fully understands the difficult phonematic processes. These games develop the cognitive scope as well, that is, thinking, memory, and concentration.

An intervention in phonological insufficiency reduction was implemented in successive stages: Awareness of phonematic test criteria, indicators, evaluation indicators, and assessment levels (Table 3) were determined and implemented in speech therapy for children. Based on the phonological perception assessment results, games were selected according to symptoms of the disorder, in parallel to generally accepted intervention methods, and the created games were included in the intervention. Repeated phonematic awareness research was carried out after the intervention.

A logopedic statement was set during an in-depth speech therapy session conforming to the job description of a speech therapist. Inclusion of underaged participants was determined by a specific expert, and an informed consent form was signed by the head of a preschool educational institution. Legal guardians of the underaged participants were then spoken to, who, by signing the informed agreement, agreed to the participation in the study.

Parameters for underaged participants in the study included their age and logopedic statements.

The intervention was implemented in five Latvian preschool institutes among 49 children aged five and six by the speech therapist from each preschool under the supervision of the researcher from March 2021 to August 2021.

The initial and follow-up phonemic awareness test used a phonemic awareness testing protocol developed by the author (protocol not included due to restrictions on the length of the article), and the intervention used a set of games developed by the author (only one sample game is included in the article (Fig. 6)).

The correction action included in the game set was implemented for the following sounds: [Z] → [S]; [Z] → [D]; [S] → [T]; [P] → [B]; [T] → [D]; [R] → [L].

The paper presents the criteria, indicators, assessment levels, and scores (determined by the author) for the phonemic awareness verification (Table 3).

Table 3. Phonemic awareness testing criteria

Criteria	Criteria indicators	
Phonological apprehension	1. Define a word in a queue of other words	
	2. Speech sound detection in a queue of other speech sounds	Define a long vowel
		Diphthong detection
		Similar in place and manner of articulation, different in vocal cord involvement
		Similar in place of articulation, different in manner of articulation
		Similar in manner of articulation, different in place of articulation
		Similar in place of articulation, different in active speech organ
	3. Repetition of syllable rows	Two-syllable line
		Three-syllable line
	4. Name words with a certain sound	
	5. Distinguishing acoustically similar-sounding words	
Phonematic analysis	1. Detecting the first sound in a word	
	2 Detecting the last sound in a name	
	3. Naming a word by its sounds	
	4. Detecting the sound position in a word (beginning, middle, end)	
	5. Detecting the number of sounds in a word	
Phonematic synthesis	1. Merging sounds into open syllables	
	2. Merging sounds in closed syllables	
	3. Merging syllable sounds with consonant clusters	
	4. Merging syllables in two-syllable words	
	5. Merging syllables in three-syllable words	

The author of the research identified four ratings:
- 4 points – a child's task is carried out independently;
- 3 points – a child's task is performed with the aid;
- 2 points – a child's task is carried out with difficulty;
- 1 point – a child is unable to perform the task.

For each of the phonemic awareness indicators, specific tasks were set. Although 78 tasks were included in the study protocol, due to restrictions on the length of the paper the protocol is not viewable.

The following phonemic awareness assessment indicators were also identified:
- 312–279 points (70–78 tasks) – phonological perceptual disorders have not been identified;
- 278–228 points (57–69 tasks) – mild level of phonological awareness;
- 227–153 points (56–39 tasks) – moderate level of phonological awareness;
- Fewer than 152 points (38 tasks and fewer) – low level of phonological awareness.

The maximum score for all 78 correctly completed tasks in the phonemic awareness test is 312 points, and the minimum score is 78 points.

Figure 6 shows that at the beginning of the study, seven children were diagnosed with a low degree of phonological awareness, 12 children with a moderate degree of phonological awareness, and 25 children with a mild degree of phonological awareness. For five children the examination results show that phonemic perception disorder was not identified; however, these children showed significant errors in individual phonemic perception research criteria.
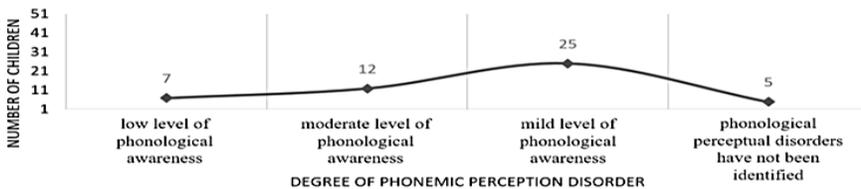
Figure 6. Phonemic awareness verification results before intervention in March 2021

For a more complete insight into the intervention, a sample of a game is provided below.
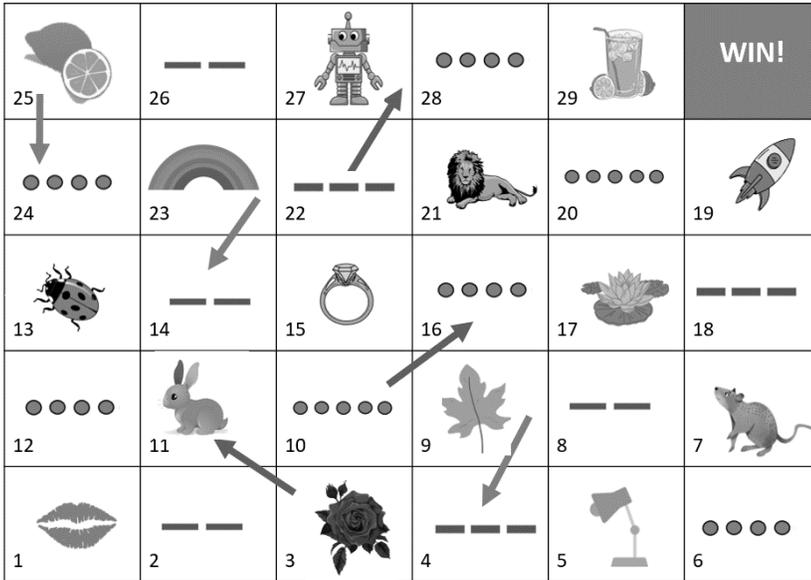
Figure 7. "Circus – 4": Name (or find in images) the word based on the number of syllables or sounds

The game shown in Figure 7 has the highest difficulty level. Its rules are based on those of the traditional board game "Circus." There are two or three participants, a die, and game pieces in different colors (one for each participant). The goal is to correctly articulate, differentiate, and use the sounds [R] and [L] in conversational language.

The tasks are as follows: 1. Correctly say the name of the image; 2. Activate phonemic awareness to distinguish sounds [R] and [L] at the beginning of the word; 3. Promote phonemic analysis and synthesis; and 4. Expedite visual attention and memory.

The game can be played by one or multiple players (as decided by the game host, in this case the speech therapist). The participants in the game move up the board. If they land on an image, a child names what they see in it; if they land on an arrow, they follow its direction, either up or down. When they land on the image indicated by the arrow, the participant names the object, phenomenon, etc. they see. If they land on dashes, the participant/participants must think of (or find in the support material) the word (image) with the specified number of syllables. If they land on dots, they must think of (or find in the support material) a word (image) with the specified number of sounds.

At the end of the intervention, a follow-up phonemic awareness examination was conducted.
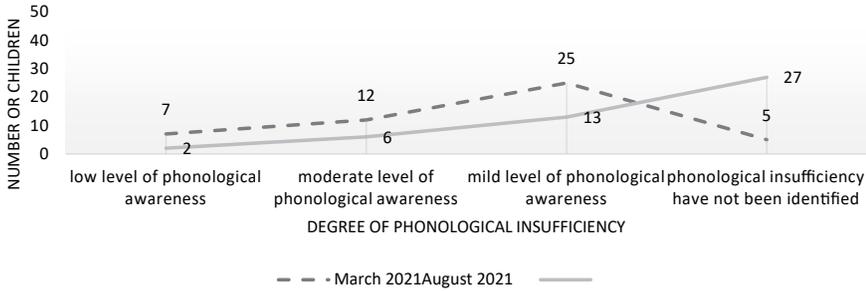
Figure 8. The comparison of level of phonological perception in children

As can be seen in Figure 8, at the end of the study two children were diagnosed with a severe degree of phonemic awareness disorder, six children with a moderate degree of phonemic awareness disorder, and 13 children with a mild degree of phonemic awareness disorder. For 27 children, the examination results show that no phonemic awareness disorder was identified.

Conclusions

A review of the theoretical literature confirmed the author's hypothesis that a game is an effective instrument of intervention in reducing phonological insufficiency. The principle of sequencing should be followed, which is the basis for a qualitative, result-oriented work in reducing phonetic insufficiency.

Different methods and techniques are used in interventions to reduce phonetic insufficiency, such as mimicking, repetition, rhythmizing, analyzing, and synthesizing, all of which can be implemented during a game. A game is, by its nature, interactive, requiring a child to work based on their own previous experience, knowledge, and abilities. A game, as the leading action for a preschool child, contributes to the development of imagination, speech, and language, which is necessary for the development of mind games and logical thinking.

The results of this empirical study of speech therapists show that games to correct different speech sound disorders are often utilized in speech therapy sessions, to reduce both phonetic disorders and phonetic-phonemic deficiency, because they contribute to a spontaneous use of language and activate communication. Likewise, the answers of speech therapists suggest that games can simultaneously create joy and provide knowledge and skills. Undeniably, visual representation is important to a game, as is whether it can be used by or adjusted for multiple linguistic activities, such as listening, speaking, reading, and writing.

The comments given and recommendations made by the experts about the game collection created by the author leads to the conclusion that it is a relevant and

effective instrument in phonological insufficiency reduction. Likewise, the expert comments gathered and analyzed in the paper allow us to claim that the game collection interests participants in actions to correct and develop their speech, indirectly enabling all the tasks proposed in the game and reach the set goal.

Before the process of promoting phonological perception according to the criteria developed by the author of this study began, the levels of development of children's phonological perception were identified and determined. The results of the initial phonological perception survey in March 2021 showed that seven children were assessed as having a low level of phonological awareness, 12 children were assessed with a moderate level of phonological awareness, 25 children were assessed as having a mild level of phonological awareness, and five children were assessed as having fully proficient phonological awareness but making some minor errors in some tasks. The results of the phonological perception retest in August 2021 showed that all the children in the study had improved their phonological awareness, thus confirming that the games developed by the author are an effective tool in reducing phonological insufficiency.

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The Power Of Storytelling in Improving Students' Emotional Well-Being

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ABSTRACT

The emotional well-being of students in the higher education space as a subject of the research forms is an important part of the research both in the context of the COVID-19 pandemic and as well as before and after the pandemic. One of the dimensions of research is students' emotional well-being in performance-oriented curricula. Performance-orientated curricula include the acquisition of interdisciplinary competencies that can reduce students' subjective indicators of emotional well-being. In turn, storytelling as a method of pedagogical support has confirmed its effectiveness. Therefore, the research focus of this study is students who are studying in one of the programs of the performance-orientated subgroup; the study context is formed by the period of the first lockdown of the COVID-19 pandemic. The aim of the research is to identify the effectiveness of storytelling as a method of pedagogical support in promoting students' emotional well-being.

This article presents the results of a case study in one higher education institution in Latvia. Qualitative approach has been selected for the research. Once a week during four-month period, 12 participants shared stories about their current issues. Session transcripts were encoded and then analysed in the qualitative data processing program NVivo 12. The results of the research were interpreted within the framework of the theory of self-determination. The transcripts of the sessions identified all the indicators formulated within the theory of self-determination: competence, relatedness, and autonomy, which were improved using storytelling. The results suggest that study courses on stress and emotional burnout management should also be included at the higher education level, which would allow to increase students' skills to manage uncertainty situations. This study is a small, but research-sensitive indicator for promoting student well-being.

Keywords: higher education, NVivo, performance-orientated learning process, storytelling, students' emotional well-being

Introduction

The COVID-19 era has unexpectedly introduced adjustments to the implementation habits of various processes, which in turn has changed the focuses of understanding of processes and phenomena, thus clearly highlighting weak points and points for discussion. The student population was considered a particularly sensitive group long before the pandemic era. In turn, due to the pandemic, the burden on students' mental health has increased for various reasons. This statement is supported by research results around the world, namely, that the COVID-19 crisis has increased the risks to students' mental health, including in performing arts pedagogy, where individual lessons and presence have been an important additional component due to the minimal use of technology in the learning process. This situation raised various risk registers and challenges in the implementation of the learning process, strongly demanding to quickly find alternative ways of learning due to the global crisis. The described problem allows us to call the situation a student well-being crisis, so resources are needed to improve the situation.

The learning experience of students in higher education is shaped by the learning environment and communication (Barden & Caleb, 2019). Students' well-being is an essential part of the learning process also at the higher education level (Bücker et al., 2018), as the absence of well-being can be the reason for poor academic performance (Geertshuis, 2019). Additionally, the lack of support for maintaining well-being can limit the student's performance and involvement, the consequences of which may be related to drop out and achievements in the future professional life (Turner et al., 2017). At a general level, higher education is about developing a 'whole and integrated person' (Keeling, 2014, 144). Educators, on the other hand, play a key role in organizing an effective learning process that promotes students' well-being, thus encouraging power to flourish as professionals and responsible citizens (Okanagan Charter, 2015; Medne & Jansone Ratinika, 2019).

The ideological focus of this study was determined by the case when students had a chaotic, disproportionate and uncertain workload during the first lockdown (2020. Marth – 2020. June) of the COVID-19. Due to the existing inconsistent organization of the learning process, they needed emotional support. For this reason, the students initiated the creation of an emotional support group. In order to deal with the situation effectively and professionally, the methods of providing psychological support in a critical situation – in a sudden and uncertain change of the learning process, in addition to being feasible in a remote format – were sought. Storytelling was identified as one of the methods for expanding students' psychological resources (Medne, 2022). According to the described situation, the purpose of the study was determined: to identify the benefits of storytelling as a pedagogical support method in promoting students' emotional well-being. The

well-being of the students was determined as the subject of the study, the choice is justified by an empirically based argument that in promoting the subjective quality of a person's life, more attention should be paid to the promotion of positive aspects than to the reduction of negative aspects (Huppert & Whittington, 2003), because exactly this focus of intervention and research has a positive effect on health literacy and life expectancy.

Storytelling as a tool, its use procedure

Storytelling is becoming an increasingly important tool for those working with vulnerable and sensitive population (Botfield et al., 2017). In order to make complex messages easier to understand, storytelling is increasingly used in various industries as a tool both to educate and promote the change of certain behaviour patterns, as well as to improve the ecology of relationships. This is because many resources are allocated to storytelling as a tool in theory (Holloway & Freshwater, 2007; Liehr & Smith, 2014): it creates a healing experience, promotes self-expression, mutual learning, lets you know your vulnerability, share your emotions and experiences, promotes feeling, promotes emotion management skills. In addition, purposeful dialogue between generations is emphasized as an essential storytelling resource, thus ensuring the ecology of relationships, increasing involvement, including in civically responsible activities (Liehr & Smith, 2014). Which is an essential resource, because in the context of Latvia, the COVID-19 pandemic also brought up an active discussion about civically responsible behaviour. The resources of storytelling as a method clearly define the place of the teacher as an emotional support person in the educational process, which provides for an expanded interpretation of the pedagogical mastery of the university lecturer, including marking the teacher as the determining human resource in the implementation of civic education (Medne et al., 2021), which is currently being used in the space of higher education, defined as cross-cutting competence.

In order to use storytelling effectively, Guber (2007) offers a storytelling model that contains four rules or truths:

1) be true to yourself, thus expressing your deepest and truest attitudes and values,
2) be true to the group, making the time spent valuable, meeting the needs of all,
3) being true to the moment (COVID-19 pandemic in this study), and
4) being true to purpose so that the story reflects the involvement and input of the storyteller, strategies for promoting well-being in this study.

These four steps, within the framework of the study, are determined as the ideological basis in the constructs of student support group stories. On the other hand, the topics and content were freely chosen by the students.

Methodology

In order to achieve the aim of the study, an action research methodology of a qualitative approach was chosen. The choice was determined by the focus of the specific design options, namely, that such research designs allow to study different types of problems and their solutions from different angles, as well as the frame of professional development of practitioners and the educational focus, because they ensure the progress towards a better understanding of the research participants in relation to the discussed topic and the spoken meanings (Koshy, 2010). Within the framework of this research, the focus of self-education and self-improvement has been identified as the most important. Within the framework of the study, students reflected on their own and other students' well-being, according to their feelings in the context of learning during COVID-19. In turn, qualitative research design is suitable for research within the educational framework (Lodico et al., 2010), because it allows to obtain various information about the pedagogical process provided by the perspectives of teachers and students (Thanh & Thanh, 2015). Additionally, the field of data obtained in qualitative research includes the study of the experiences, attitudes, interpretations, concepts, feelings, and opinions of the involved subjects (Lodico et al., 2010). Student well-being is subjective, in order to understand the students' experiences and their mutual relations, the qualitative approach was chosen, which ensured that it is possible to identify the individual in the collective. Within the framework of this study, the researcher and the participants of the study collaborated in order to be able to construct, as a result of this cooperation, a frame of vision for the well-being of the participants, which could identify recommendations for improving the learning process. Such a methodological focus has been established, as research in the education sector is beginning to focus attention on the issues of quality improvement (Medne, 2022).

The combination of research focuses in the study is designed according to the funnel principle – from the widest to the narrowest.

Table 1. Study Exploratory Focuses

Identified focuses in the study	Focus type
Well-being	Context
Self-improvement (educational)	Interventional
Quality frame of the educational process	Methodological

Study procedure

The study procedure was carried out within one higher education institution, in the student population during one semester. Storytelling techniques consisted of a series of steps: for four months, once a week, 12 participants shared stories that they thought were important to them. The content and form of the stories were not limited, the students chose freely. Sessions were arranged remotely using the Zoom platform. The stories of each session were recorded, then transcribed, and the transcripts were coded. Students in the transcripts were coded, each assigned a letter code (from A to L). The story set consisted of 216 transcripts. An array of data to be processed, for the analysis of transcripts, justified the choice of the qualitative data processing program QSR NVivo 12.

The data obtained were analysed in two stages:

Stage 1. Transcripts were imported into the NVivo 12 program and analysed using qualitative and quantitative contextual analysis. The choice of NVivo was determined by the recognition that its use increases the validity of the qualitative study (Siccama & Penna, 2008). Transcript processing and analysis was implemented in the following order:

1) preparation of transcripts in Microsoft Word;
2) import of transcripts into NVivo file;
3) deductive coding of transcripts into NVivo file;
4) according to the code structure created in the context analysis, interpretation of content.

The choice of deductive coding was justified by its conceptual scope, namely, that it provides, in its essence, structure and correspondence to a theoretical frame. This is a top-down approach in which the first step is the identification of a set of codes: within the framework of this research, the identification of a matrix of categories of student well-being, and the second step is the identification of codes in transcripts. The set of codes for identifying well-being in transcripts was determined in accordance with Noble and McGrath (2015), who in the educational context offer seven components for explaining the content of well-being:

1) Positivity – optimism, a range of positive emotions, humour;
2) Relationship – ecological relations;
3) Outcomes – a sense of competence, individual success;
4) Strengths – awareness of one's strengths and the possibility to develop them;
5) Purpose – the existence of a goal, a sense of meaning in life;
6) Engagement, according to the authors, this is one of the most important aspects of education;
7) Resilience – the ability to adapt to changes, to survive failures and disappointments.

Thus, the strategy of this study consists of moving from the general to the specific: from the theoretical to the practical, studying the set of components of well-being in a new context: in the context of COVID-19.

Stage 2. The plausibility of the change in the well-being criteria was tested in sample sets related to the Student's t-test. In order to test the dynamics of the well-being criteria, a null hypothesis (H0) was formulated: there is a connection between the increase in the well-being criteria and storytelling; and the alternative hypothesis (H1) was accepted: there is no connection between the effectiveness of storytelling and the increase in well-being.

Research ethics

The study was conducted in accordance with ethical aspects: informed consent was obtained from the study participants, the respondents were informed about the voluntary principle of participation in the storytelling group, the participants were informed about the principle of confidentiality, as well as the right to terminate their participation in the group at any time.

Respondents

The group was set up on the initiative of the participants and participation was voluntary. The group consisted of students of one semester. So, the type of study sample: the typical sample. The same number of participants ($n = 12$) started and ended their participation in the group, the composition of the participants remaining unchanged.

Results

The first step in data processing was quantitative contextual analysis, so deductive coding was performed to identify the criteria of well-being in transcripts and to fix the range of number of codes. Deductive coding identifies all the codes identified by Noble and McGrath (2015). The transcripts as a whole ($n = 216$) yielded the following range of all codes (Table 2).

Table 2. Number of codes in all transcripts

Code	Total number of codes
Positivity	189
Relationships	256
Outcomes	167
Strengths	223
Purpose	134
Engagement	195
Resilience	205

The largest number of codes consists of Relationships ($n = 256$), followed by Strengths ($n = 223$), followed by Resilience ($n = 205$), then Engagement ($n = 195$), then Positivity ($n = 189$), then Outcomes ($n = 167$), and the smallest number of codes is Purpose ($n = 134$). Thus, it can be concluded that the students' well-being frame consists of all the components specified in the theory.

In a further step, qualitative content-analysis was implemented, which led to the conclusion that the content load of all codes conceptually overlaps with three criteria of the theory of self-determination: Autonomy, Competence, Relatedness, thus, can identify the content units – *sense* – presence in transcripts. This makes it possible to assume that the existence of meaning is an essential background for well-being. This conclusion is consistent with other studies (Weinstein et al., 2012, Martela et al., 2018. So, it can be argued that the results of this study offer some empirical support for this theoretical approach.

As a result of qualitative content analysis, it can lead to specific conclusions that the author of the study considers to be significant for Storytelling resources:

- in their stories, the participants position themselves and their experiences in a classic story circle, without even knowing the theoretical framework about it. The story circle allows you to improve the storyteller's skills, which is an essential component of the educational focus;
- all the stories of the participants included a set of subjectively diverse interpretations of situations. This is because they were able to represent themselves, which created an opportunity for many to meet themselves for the first time with the true self. This conclusion is characterized by respondent U: *I am already 21 years old, and I really understood the causes of my actions for the first time. I feel really confused because I think I know myself and always act consciously*;
- for five participants, the reflexive experience of sharing stories of their own experiences turned out to be empowering, as described by respondent F: *I feel that I was born a new person, they call it maturation – I don't know, but I know that I can face new challenges*, even cathartic, as described by respondent O: *I have such a relief, I really look at things differently, and I feel brave, strong and free, pleased, even if hurt by saying "no"*;
- two respondents discovered that they spoke openly for the first time about an experience that had not been previously formulated, described by respondent D: *I spontaneously spoke for the first time, I always reflected on what I will say, also at the beginning of our conversations I carefully prepared. It's so relieving that you can say what you think and nothing's gonna happen to you.*

In the next step, code dynamics were captured in the first and final transcript of the program (Table 3).

Table 3. Dynamics of the number of codes

Code	Total number of codes	First transcript	Final transcript
Positivity	189	71	118
Relationships	256	125	131
Outcomes	167	85	82
Strengths	223	57	166
Purpose	134	52	82
Engagement	195	51	144
Resilience	205	84	212

Comparing the number of codes in the first and the final interview, it can be concluded that of all the well-being codes, during the storytelling intervention, these codes increased the most: Positivity (from 71 to 118), Engagement (from 51 to 144), and Resilience (from 84 to 212).

In this study, a specific phenomenon in code dynamics was identified as a result of the content-analysis, that not only the number of codes has changed during the intervention, but also the content of the codes has changed significantly, which respondents describe as follows:

Respondent X code *Positivity* – (first transcript) *I don't know what to be happy about all the time, it doesn't sound good* (final transcript) *there is also a satisfaction at last for that remote singing. I think I could never like it, but if the lecturer finds the right approach, it's a pleasure to have remote learning and remote singing too.*

Respondent Z Code *Strengths* – (first transcript) *I'm ashamed, I've never been so weak,* (final transcript) *surprised at myself; I can handle it, I can finally talk about this inability of mine.*

In order to check the reliability of the dynamics of well-being codes, in the second stage of the study, hypotheses resulting from the results of the first stage were formulated: there is a connection between the increase in the well-being criteria and storytelling the alternative hypothesis (H1): there is no connection between the effectiveness of storytelling and the increase in well-being. Since the results of the second stage of the research are obtained using an interview, the data selected for dynamic analysis were analysed using continuous comparative analysis. The reliability of the changes was checked with the Student's t-test of related sample groups, and it was found that the changes in the obtained results before and after the storytelling intervention are statistically reliable ($\alpha \leq 0.05$). Analysing the results of the second stage of the study, it was concluded that the alternative hypothesis can be rejected, and the null hypothesis accepted: this means that there is a connection between the increase in the well-being criteria and storytelling.

Discussion

Despite the fact that this study has several limitations (territorial, numerical limitation), the conclusions of the study are significant from various angles. First of all, there are relatively many studies on really effective intervention techniques that would promote students' well-being in the world, but no such studies were found in the context of pedagogy in Latvia. Research and project reports on the promotion of students' well-being in the education space of the given country were searched using open access databases: PubMed, ResearchGate, SciELO, Cohrane Library, Campbell Collaboration, EppiCentre, ScienceDirect, SpringerOpen, and Academia, as well as a database of published doctoral theses. Literature units were searched using Boolean search operators. The absence of evidence-based resources allows us to conclude that the results of this study offer an evidence-based strategy that allows improving the quality of life in general by effectively guiding the students' cognitive position on well-being. This, in turn, makes it possible to increase well-being as a state of personality. Because it is the existence of strategies to increase well-being that contribute to people's quality of life (Huppert & Whittington, 2003). So, it can be concluded that storytelling is a method that expands the repertoire of well-being management strategies of the students. Secondly, the conclusions of this study could be a step and a call for purposeful action regarding the focus of students' emotional well-being. It is emphasized that this is especially effective if a comprehensive approach to well-being is developed using the so-called "whole university approach" (Seldon & Martin, 2017; Baik et al., 2016). Thirdly, the results of this study have highlighted that storytelling could be a suitable method for solving typical situations, the methodology of which is not complicated, every teacher could learn it. Furthermore, this study focused on a very important subset of the population – the student population wherecommunication is an important part of the development.Thus, the costs of its acquisition and implementation could save financial resources in the future, already at a later stage as mental health treatment. Therefore, fourthly, it is justified to conclude that the connection between students and teachers at the level of higher education is insufficiently studied (Hagenauer & Volet, 2014). The results of this study show that ecological relations between students and teaching staff contribute to the well-being of students in the higher education environment, even in a difficult situation for all parties involved. The results of this study are consistent with those of other studies, such as

1) when higher education also enables supportive and active student-centered learning and assessment experiences that treat students as a "whole person" rather than an indistinguishable part of the student body (Morgan & Houghton, 2011).
2) Also, that the pedagogic mastery of the teacher is the dimension that determines both the students' well-being and professional growth (Medne, 2022).

Perhaps the next research focus could be the study of the emotional state of university teaching staff, because, as concluded, they are an important resource in promoting the well-being of students. Fifth, the use of storytelling can be equally important for both practice and research. If it is important for practice that the effectiveness of the used techniques has been tested in research, then empirical studies benefit from a well-grounded way in which the method enables empirical materials in research. Research designs in the educational sciences that do not take into account the experience, understanding, and freedom of action of those who will be the subject of the study are likely to be less effective than studies that do.

Conclusions

This article examines the storytelling as a pedagogical support tool in practice, its resources for improving the quality of educational practice, and outlines ideas for further research. The beginning of the COVID-19 era significantly affected the well-being of various population groups, including the particularly sensitive student groups. According to the actualization of the problem, this article proposes and empirically tests the assumption that the seven components of well-being – Positivity, Relationships, Outcomes, Strengths, Purpose, Engagement, Resilience – will change using storytelling as a pedagogical support tool. The obtained results confirm the assumption. The results also allow us to conclude that the content of well-being is related to the basic idea of the theory of self-determination, namely that self-expression, through autonomy and competence, as well as ecological relations with other people, gives meaning to life, thus making life worth living. Which is a valuable insight, especially in expanding the coping resources of vulnerable groups, thus increasing the likelihood of increasing their personal, professional and civic effectiveness. Looking into the future, the beginning of the COVID-19 could be an opportunity to systematize empirically proven strategies to promote economic and sustainable investment of financial resources to promote and maintain people's mental health.

Aknowledgment

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Future Preschool Teachers' Experiences of Mutual Learning in the Work Environment

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ABSTRACT

One of the main tasks of teachers is to improve their professional competence, which begins with their education prior to teaching. During the education process, when the identity of a future teacher is formed, their attitude should include a commitment to continuous professional development. Therefore, teacher training programmes aim to increase young teachers' readiness to engage in the development of their professional competences throughout their working lives. One of the best approaches to professional development is learning in the workplace as part of a team (i.e. mutual learning between employees). Pre-primary learning is important because a common understanding of the existing educational institution and a desire to learn from one another promote change in teachers' personal approaches and in educational institutions at the organisational level.

The theoretical framework of this research consists of theories on social learning, mutual learning, characterisation of preschool teachers' professional competence in knowledge, skills, values and social behaviour and unity. Notably, it has been found that preschool teachers learn best and gain experience by learning from one another in their communities, which is reflected in their practices.

This research aimed at examining the experience and opinions gained during the pedagogical practice of future teachers regarding the opportunities, advantages and disadvantages of mutual learning. The research methods included a literature review, and content analysis. The sample included 280 students from a preschool teacher study programme. This study uses a qualitative research method and the qualitative data processing programme NVivo. The results show that prospective teachers have developed different experiences of mutual learning during the implementation of study practice tasks. In general, students describe mutual learning in relation to the theoretical principles acquired in the study process.

Keywords: mutual learning, pedagogical practice, professional competence of preschool teachers, professional development of teachers, professional learning communities, teacher training

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Introduction

One of the essential basic tasks in a teacher's professional activities is improving his or her professional competence. A teacher's professional development begins before they start real work at a school; that is to say, during the study process, when the future teacher's identity and attitude towards continuous professional development are formed. One of the tasks of teacher education programmes is to promote the readiness of young teachers to engage in improving their professional competence throughout their entire working life.

The purpose of the study is to investigate the experiences and opinions of future teachers during their pedagogical practice in terms of the opportunities, advantages and disadvantages of mutual learning. Evaluating future teachers' understanding and practical experience of learning at the workplace is important for improving teacher study programmes, goal orientation when organising student internships, cooperation among universities and student pedagogical internships. During the study process, it is necessary for new teachers to achieve readiness for further professional development.

Among the most effective ways of professional development today are learning in the workplace and learning in a team; that is, mutual learning among colleagues (Brücknerová & Novotný, 2019; Imants & Van Veen, 2010; Kokare, 2012; Meirink et al., 2010; Virkkula & Säde-Pirkko Nissilä, 2014). In a preschool educational institution, mutual learning is important, as it instils a common understanding of the institution and a desire to learn from each other. It promotes changes both at the personal level (i.e. the teacher) and at the organisational level (i.e. the educational institution). In the preparation of preschool teachers, it is important to promote students' readiness to improve their own and colleagues' pedagogical practice according to the needs of the educational environment (Kennedy & Lees, 2015; McDonald et al., 2011).

Mutual learning among teachers is part of a school's learning culture (Bredeson, 2000; Cheng, 2017; Haiyan et al., 2017; Kaulens, 2019; Kokare, 2013; Leithwood, 2006). Schools can create a learning-orientated school culture in which school leaders play an important role as creators of a positive culture of mutual learning among teachers.

Mutual learning is a process and activity designed to improve teachers' professional knowledge, skills and attitudes at an individual level so that they, in turn, can improve student learning. Research has shown that teachers' learning in practice and the formation of professional learning communities contribute to teachers' individual and collective ability to teach as well as students' success at school (Guskey, 2002; Imants & Van der Wal, 2010; Zhang et al., 2018). Professional learning communities are created in schools where teachers work together and engage in constant dialogue, analyse their practice and students' performance, search for the most effective teaching methods, solve specific

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problem situations and promote teachers' emotional well-being (Cumming et al., 2021; Jones et al., 2013; Thompson et al., 2004).

Regardless of the content that teachers provide to each other during mutual learning, the network of learning relationships at schools can have various structures. Teacher learning is in diverging contexts within the school, the following three interrelated levels of learning were set out by Imants and Van Veen (2010):

1. Individual or personal learning by teachers or school leaders within the context of the school;
2. Social learning in small groups or teams of teachers.
3. Learning that occurs across the school organisation as a whole.

To ensure that mutual learning among teachers takes place, the leader of an educational institution has an important role in how it is organised. Work based learning opportunities should be provided and well organised. There should be suitable timing and conditions, and the necessary resources should be provided. Mutual learning in the work environment requires an inspiring learning vision, organisation, feedback for teachers and participation to be encouraged for the benefit of teachers' professional development. Jones et al. (2013) outlined the following research categories that can be used in the characterisation of professional learning communities:

1. Supportive and shared leadership;
2. Shared values and vision;
3. Collective learning and application;
4. Shared personal practice;
5. Supportive conditions.

Different forms of cooperation are used in the process of mutual learning among teachers, namely, meetings in small groups, joint analysis of theoretical literature, analysis of student achievements, observation of lessons and joint planning (Linder et al., 2012; Pirtle & Tobia, 2014; Stewart, 2014; Wan, 2020).

In terms of professional competence, the activities of preschool teachers at the basic level of education emphasise knowledge of specific situations that is formed using the variables of knowledge, skills, attitude and motivation. It is the process by which teachers prove their multidimensional and complex professional competence and usually reflects the interaction of their knowledge, skills, personality, attitude and motivation (Damjanovic & Blank, 2018; Keung et al., 2020).

Improving the professional competence of preschool teachers is an important and effective part of the learning process. Research on early childhood education and care, and preschool education and quality of care—more specifically, on the competence of preschool teachers—has analysed the development perspective, finding that attention is paid more to the integral role of professional development in terms of improving the quality of preschool education and care (Thornton & Wansbrough, 2012).

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To improve the professional competence of teachers, professional qualities that have been shown to be essential for effective teaching are needed. These qualities ensure that teachers are prepared for the challenges, demands and responsibilities of teaching. The professional competence of a preschool teacher consists of cooperation, interest, motivation, communication, openness to new things, ethics and positivism (Imants, J. & Van der Wal, 2019).

An analysis of the theoretical literature shows that the growth of students is promoted by mutual learning among teachers improving their professional competence. To implement mutual learning, it is necessary for future teachers (including preschool teachers) to be ready to share their experience and practical challenges and to seek joint solutions to the needs in the specific work environment. The rest of this study analyses the experiences of future preschool teachers in Latvian preschools in terms of mutual learning among teachers in their work environment.

Methodology

The research describes and interprets the experience of future preschool teachers on mutual learning between teachers using empirical data.

The purpose of the study is to investigate the experiences and opinions of future teachers during their pedagogical practice regarding the possibilities, advantages and disadvantages of mutual learning.

The research draws from the pedagogical practice report materials of 280 second-year future preschool teachers on opportunities for mutual learning and teamwork in an educational institution. The internship period for the surveyed students was six weeks.

This study uses a qualitative research method and the qualitative data processing programme NVivo. Inductive coding was used to analyse information.

Fragments of practice materials of all 280 students included in the sample about the preschool educational institution as a learning organization were used in the qualitative data analysis (13 464 words). First, the frequency of words used was analysed. These are mentioned in the constructed word cloud in their basic form. The most frequently mentioned words were: opportunities, learning, team, educators, institution, education, learning, share, group, experience, preschool, happen, mutual, work, colleagues, exchange, manager, lesson, regularly and jointly. The article will cite fragments of student works marked with the letter *R* (respondent) and a number that indicates the order of examination of practice materials, such as *R:15*.

Based on the analysis of the scientific literature, the data obtained in the study are grouped according to four components of the learning organization:

1. Culture of the preschool institution (goals and tasks)

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2. Teaching content and methods
3. Forms of cooperation
4. Emotional wellbeing

Each code group contained several subgroups. The study analysed the examples in the subgroups for their highest usage coverage in terms of frequency.

Results

When describing mutual learning in an educational institution, the future preschool teachers mentioned forms of cooperation most often ($N = 189$). The respondents mentioned meetings ($N = 34$), observations of lessons ($N = 32$) and experience exchange seminars ($N = 20$) the most frequently as forms of cooperation.

> *At meetings, colleagues shared their insights, ideas and plans on how to make learning more effective. These meetings also let employees discuss what additional help they need.* (R:47)

> *Preschool teachers organised meetings among themselves, where they discussed their experiences, shared their problems and collaborated on how to solve them.* (R:12)

> *Teachers' meetings were held once a month. Any achieved goals were analysed together, and tasks were set for the next period. (R:203)*

> *Work in the institution was organised so that once a week, the teachers of each group could meet to discuss their students' achievements and plan future work.* (R:65)

The mentioned italicized examples of respondents indicate that information was exchanged in meetings and sessions with the aim of sharing experiences, supporting colleagues, solving problems, and analysing and planning learning content. Meetings are planned and held according to the needs and initiative of the educators of the educational institution. Based on the answers of the respondents, it can be concluded that the meetings are open, in them the teachers discuss current issues and problem situations in the pedagogical work and jointly search for possible solutions to promote the educational achievements of the students. This shows the shared values and vision of educators, which is the basis of a culture of mutual learning (Jones, et al., 2013).

Mutual learning took place through observing lessons:

> *We promoted the mutual exchange of experiences by having teachers go to observe and analyse the open lessons of other colleagues.* (R:59)

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Educators were given the opportunity to observe their colleagues in action and then provide feedback. (R:214)

Regular observations of classes and methodical discussions on work improvement took place. (R:11)

Lesson observations served to let teachers observe and analyse the learning process together. This is how pedagogical experience is learned. It is especially valuable for novice preschool teachers, for whom it is an opportunity to improve their pedagogical experience.

Experience exchange seminars (training sessions) were organised using internal resources and in cooperation with other educational institutions:

At seminars for experience exchanges, teachers presented their best practice examples. Example topics included "Hand preparation for writing", "Self-service skills" and "Descriptions of didactic games". (R:74)

Educators strengthened their teamwork skills at these experience seminars by sharing their experiences in various fields of knowledge and by creating and attending master classes. (R:138)

Excursions to facilitate the exchange of experiences were organised, as well as educational international cooperation with a preschool education institution "X" in Lithuania. (R:43)

Workshops ($N = 11$) were also mentioned as spaces to discuss issues or work in groups on a project:

From the beginning, the teachers were given reading material and questions. Once everyone was familiar with the material, management would call the teachers together. Each participant expressed their opinion on the specific issue. The future teachers shared their opinions, looked for common values and agreed on work priorities. (R:2)

Experience exchanges and workshops emphasised teamwork and cooperation, which are the bases of mutual learning. The openness of the management team of the educational institution in cooperation with preschool teachers is commendable. Discussions in the identification of common values result in priorities that derive from the values of preschool teachers. What teachers can learn from each other and how this is implemented depends on the leadership team of the educational institution, which is consistent with international research on learning culture in educational institutions (Leithwood, 2006; Walker, 2010).

Conversations and discussions were mentioned less often ($N = 13$), suggesting a limitation of time resources:

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> *The staff discussed together how to make learning more effective. Colleagues were described as able to turn to each other for advice and consultation.* (R:192)

> *Individual conversations among the teachers and with groups applied positive criticism, praise, group analysis and solution brainstorming.* (R:257)

These conversations and discussions were described as effective for mutual learning if they involved the exchange of ideas, analyses of the pedagogical process and were organised in groups.

The second most frequently mentioned component of mutual learning was the culture of the preschool institution, specifically its goals and tasks ($N = 143$). The respondents most frequently described the institution's work planning ($N = 20$), learning of new ideas ($N = 19$), transition to a new approach in education or a competence approach ($N = 15$) and the evaluation of the institution's experience and determination of development needs ($N = 12$).

Institutional work planning took place at different levels, starting from joint planning by teachers groups:

> *Group educators planned lesson plans together, then discussed their successes and failures.* (R:138)

> *An annual plan was developed jointly with management for all the educators.* (R:46)

> *The colleagues discussed how to make learning more effective and created work plans together.* (R:214)

> *The colleagues were happy to share their knowledge and work as a team when creating work plans.* (R:13)

Institutional work planning was organised by the management team and through cooperation with the educators. The evaluation of the pedagogical process informed the institution's work planning.

Learning new ideas took place through constant collaboration:

> *The whole team constantly learned and improved together (for example, robotics).* (R:16)

> *Opportunities to create a culture of constant knowledge and innovation.* (R:123)

> *The sharing of exciting ideas and various pedagogically successful events was encouraged.* (R:155)

> *Employees were given the opportunity to share their ideas and their work successes and failures.* (R: 38)

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In the process of learning new ideas, mutual learning was described as an important constant promotion of knowledge. This depends on the support and trust of the management team by systematically analysing and evaluating how to promote the culture of innovation in the educational institution.

The institution's transition to a new approach in education, also referred to as the competency approach, was described as teamwork:

> *The transition to a new branch of education involved a competency-based approach that required teamwork, so the work of a teacher in a team is appreciated and popularised.* (R:22)

> *In addition to terminology, active games, creative activities, singing and folklore all form the basis of the current "School 2030" planning approach that the institution is based on.* (R:84)

> *The institution created a unified system of mutual learning for the implementation of the new curriculum.* (R:139)

> *The school management supported various manifestations of independent and creative activities of teachers. The institution promoted the qualitative implementation of the principles of competence education.* (R:57)

Mutual learning took place through the implementation of the competence approach in practice. This was based on the creation, implementation and evaluation of a unified mutual learning system. The appreciative evaluation of the work invested by each teacher was described as important.

The evaluation of the institution's experience and the determination of development needs were characterised by various aspects:

> *In the preschool educational institution, regular planning of the institution's work, evaluation and determination of development needs took place.* (R:182)

> *In this evaluation process, employee groups identified the strengths of their work and realised what improvements were needed when planning future teaching and training work.* (R:229)

> *While observing lessons, the mutual cooperation of the adults in the group was also evaluated and solutions for successful cooperation sought.* (R:158)

During the mutual learning process, regularity was emphasised when evaluating the institution's experience, determining development needs, and identifying strengths and weaknesses. This resulted in the joint planning of future activities.

Emotional or subjective wellbeing was the third most frequently mentioned component of mutual learning ($N = 127$). It has been described as one of the

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dimensions of wellbeing and includes wellbeing constructs (Seligman, 2012), which formed the subgroups of this component in the study.

Among the respondents' answers, support from colleagues ($N = 32$), a positive microclimate ($N = 19$), team spirit ($N = 18$) and trust and mutual respect between colleagues ($N = 11$) were mentioned the most often.

In the process of mutual learning, peer support was mainly described as help by giving advice and consultation:

> *Staff discussed together how to make learning more effective, and colleagues could turn to each other for advice and consultation.* (R:47)

> *Employees of the preschool institution were like a team that helped and supported one another in any situation.* (R:49)

> *The team included colleagues who wanted to be proactive, were able to listen to others, shared their experiences and strengthened their common goals.* (R:85)

> *Close communication between the institution's management and teachers gave them the opportunity to improve their teaching content and receive help or support.* (R:162)

In the context of mutual learning, peer support was described as related to the skill of listening and communicating, aimed at purposeful learning:

> *A positive microclimate in the process of mutual learning was characterised from the position of the collective.* (R:24)

> *The team was described as friendly and that no one was left behind.* (R:78)

> *Educators had a positive attitude towards cooperation and team learning.* (R:151)

> *In general, there was good cooperation in the team. The teachers learned, shared their experiences and supported each other.* (R:233)

> *There was openness and positive cooperation in the collective.* (R:247)

A positive microclimate in a mutual learning work environment was described as having a positive attitude towards each other and cooperation and by fostering team friendliness and openness, which included the support of colleagues.

Team spirit related to activity planning for the educational institution and events preparation, which involved both management and educators:

> *The work of the kindergarten team was described as clearly manifested in those moments when they had to prepare an event for the entire kindergarten. Everyone got involved, including management, teachers, technical staff and sometimes also the children's parents.* (R:53)

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> *The teachers planned the institution's annual tasks, monthly themes and holiday ideas together.* (R:69)

> *To strengthen team spirit, excursions were organised twice a year, such as themed afternoons and creative workshops.* (R:212)

In the context of mutual learning, the respondents described thinking about how to promote team spirit by offering different forms of cooperation.

Trust and mutual respect between colleagues were also described as aspects of mutual learning in the following statements:

> *Trust and mutual respect are core values.* (R:28)

> *Trust, mutual respect for each other, support and help for new teachers from existing employees of the institution.* (R:74)

> *Colleagues feel comfortable turning to other colleagues for advice, ideas and consultation.* (R:223)

> *Working in a team builds mutual trust in the team. We learn from each other and gain experience every day.* (R:248)

In the process of mutual learning, trust and mutual respect between colleagues were described as the basic values of emotional wellbeing, facilitated by teamwork.

The new learning content and methodology were analysed to help describe the last components of mutual learning included in the study ($N = 44$). Among the responses, the learning of new skills ($N = 12$), use of modern technologies in the learning process ($N = 11$) and changes of experience in curriculum planning ($N = 10$) were mentioned most often. The frequency of the responses was fairly equal, indicating that all the mentioned characteristics of mutual learning were valued equally.

Learning new skills was described as related to the openness of the institution's staff, as shown through the following statements:

> *Employees learn to cooperate together and tend to exchange new ideas.* (R:71)

> *The institution's staff is open to innovation.* (R:105)

> *Every day, colleagues share their insights, ideas and plans on how to make learning more effective.* (R:186)

The respondents described the implementation of modern technologies in the learning process to promote the effectiveness of mutual learning, as shown through the following statements:

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> *Currently, the technologies more actively used are computers and projectors.* (R:64)

> *Interactive technologies and tools are used.* (R:80)

> *The staff of the institution are more than happy to use the digital board for their teaching work.* (R:138)

> *Experience is exchanged by sharing video materials, filming the lessons and sending [the recording] to other colleagues in the e-class, where the video material is easily available.* (R:171)

> *To ensure mutual learning and teamwork, the Board of Education created a link on its website where preschool institutions can post work materials.* (R:247)

The responses indicate that the surveyed educators have acquired IT skills and use the latest technologies per their own initiative.

The change of experience in curriculum planning was characterised by the institution's management team cooperating with educators to promote the targeted involvement of children in the learning process. This is demonstrated through the following statements:

> *Every day, teachers regularly plan child-centred and integrated learning content within the learning areas, integrating the development of cross-cutting skills, so that this process is full of joy and surprises for the children.* (R:7)

> *To ensure the children's meaningful involvement in learning, the institution's educators, in cooperation with management, create monthly plans that specifically indicate the results to be achieved, according to the learning areas and the children's age.* (R:83)

These responses indicate that the change of experience when planning the curriculum took place in accordance integrated curriculum planning and with the age and needs of the children.

Conclusions

1. Future preschool teachers generally have a positive experience of mutual learning in their work environment.
2. For future educators, mutual learning is mainly connected to the form of cooperation chosen ($N = 189$).
3. From the point of view of future preschool teachers, the culture of the preschool institution ($N = 143$) and emotional well-being ($N = 127$) are equally important in the process of mutual learning.

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4. Future preschool teachers analyse mutual learning less in relation to teaching content and methodology. Although educators indicate that they learn new methods of implementing the curriculum in the process of mutual learning, this does not happen regularly.

5. Future preschool teachers understand the essence of mutual learning and can name its advantages, namely goal orientation and teamwork and cooperation in the planning, implementation and evaluation of the learning process.

6. Based on the results of the research, positive mutual learning is based on the common goals of the educators of the preschool educational institution in terms of what the institution wants to achieve as well as the awareness and implementation of self-improvement in practice. Fostering a collaborative, open, trusting relationship that enhances collegial support and cohesion among preschool educators is the essence of peer learning among preschool educators.

7. The results of the study show that mutual learning among preschool teachers results from cooperation with the management team. To promote a mutual learning culture for preschool teachers in the work environment, it would be important to know the management team strategies of educational institutions that promote mutual learning among teachers.

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Indicators of Social Emotional Health (Sehs-T) and Resilience in the Latvian Teachers' Sample

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ABSTRACT

In crisis situations, on the one hand, teachers must be resilient, know not only how the didactic of the subject works, but also technologies, the psychology of pupils, classroom management, self- regulation, time management, self-compassion etc. Research on teachers' social emotional health and resilience is important for quality learning and well-being at school, especially during the challenges of the COVID-19 pandemic. The following paper provides a description of the study that was carried out in Latvia on the problems of teachers' social and emotional health distance learning during the COVID-19 pandemic, and in the context of an international study in the Erasmus + project research "Teacher resilience: problems and solutions. Supporting teachers to face the challenge of distance teaching". Therefore, the samples are denoted by $N_1 = 23$, $N_2 = 635$, $N_3 = 380$, $N_4 = 245$. The main question of the paper is: Which of the variables (burnout, work engagement strategies) most significantly predict teachers' social-emotional health indicators?

The results showed that there were statistically significant positive correlations between teachers` SEHS-T, teacher engagement, and emotional burnout rates. The other results show low scores from SEHS-T which could indicate that teachers' self-confidence could be problematic, which could be explained by their uncertainty about their work during distance learning in a stressful COVID-19 crisis and that they need support for developing their strengths. The other results show that Resilience are moderate medium, but about 18% of the sample demonstrates the lowest Resilience scores. Results from SEHS-T: the subscale of teacher work engagement Cognitive engagement ($p < 0.001$) is significant in predicting SEH-T indicators.

Introduction

Scientists have concluded in their research that the teacher's profession is one of the most stressful professions (Clipa, 2017; Kim & Buric, 2020). The teachers' daily life is always full of duties, challenges as well as contact with people from

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various groups (Sandoval-Hernández, Knoll, & Gonzalez, 2012), but starting with March 2020, COVID-19 pandemic introduced large changes in the education system in the entire world, which has caused more challenges than ever before (Carrillo & Flores, 2020; Cardullo, Wang, et al., Burton & Dong, 2021). According to US researchers Gail Wagnild and Heather M. Young's developed concept of resilience, when facing depressing vices of life, individuals with high resilience can adapt, re-establish the balance and avoid the impact of potentially harmful stress (Wagnild & Young, 1993; Wagnild, 2004, as mentioned in Svence, 2016). Susan Beltmen et al. have indicated that teachers' resilience is a research field that provides the opportunity to understand what allows teachers to endure when faced with challenges and offers an additional perspective for the research of stress, burnout, and its component exhaustion (Beltman, et al., Mansfield, & Price, 2011). Like in other countries of the world, in Latvia due to the COVID-19 pandemic emergency, the work of schools was restricted from March 13, 2020; thus, teachers were forced to meet previously unexperienced teaching conditions, adjusting to online teaching. Such an unexpected and fast moving from face-to-face to distance teaching is referred to as "emergency remote teaching" in scientific literature (Carrillo & Flores, 2020; Hodges, et al., Moore, Lockee, Trust & Bond, 2020). Emergency remote teaching differs from correspondence education with its related difficulties because face-to-face educational institutions are mostly not ready to provide suitable infrastructure for online teaching, and teachers lack information and experience to teach by distance (Zhang, 2020, as mentioned in Carrillo & Flores, 2020). Results of an end of the school year survey conducted by the Ministry of Education and Science in cooperation with Edurio online platform from May 26 till June 12, 2020, indicate to a potential lack of the teaching infrastructure and experience to provide distance teaching for the teachers of Latvia. Surveying 4662 teachers in comprehensive secondary and vocational secondary educational institutions in Latvia, it was concluded that "when teaching by distance, 76% of the teachers spent more time than teaching face-to-face" while "74% of the teachers often or very often felt overworked during distance teaching" (IZM and Edurio survey, 2020).

In case of emergency remote teaching not only technological but also pedagogic challenges should be considered. Online teaching creates the need to reconsider the teaching approaches used in face-to-face classes. In the virtual classroom the teacher is more like a moderator and consultant, and researchers consider that lessons cannot be organised the same way they are in the physical classroom. Therefore, learning, especially management and feedback, is to be differently organised. Innovations in teaching methods to engage students need to be introduced, thus stimulating students' learning. Especially, new approaches are required to keep the students' attention while they are looking in the screen. First, to plan a suitable pedagogical course for distance teaching, it is necessary

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to increase the technological skills of the involved participants (Mukhtar et al., 2020; Verawardina et al., 2020; Thomas & Rogers, 2020; Eyles, et al. Gibbons & Montebruno, 2020 as mentioned in Ferri, et al.Grifoni & Guzzo, 2020).

Scientists consider that although teachers may understand at the cognitive level that remote education is necessary, at the emotional level they may not accept changes and, thus, suffer from burnout (Kin & Kareem, 2018 as mentioned in Sokal, et al., Eblie Trudel, & Babb, 2020). There is a risk that teachers who are used to teach only face-to-face will feel that, when teaching remotely, they are less effective as teachers, therefore their results, and thus also their students' learning outcomes, will get worse (Eblie Trudel, & Babb, 2020; Cardullo, et al., Wang, Burton & Dong, 2021).

A study in Latvia on the relationship between teachers' autonomy and burnout and self-efficacy indicators during remote teaching (Kalniņa, 2021) reveals that most teachers feel exhausted, experience difficulties to deal with challenges and cooperate with the children's parents. However, findings of the qualitative research do not indicate to the teachers' inability to meet challenges. That leads to a thought that the teacher's profession includes resilience as one of the features of the profession.

Scientists predict that although teachers' work efficiency may reduce initially, taking into consideration the new requirements, their self-efficacy may renew over time, now when they learn to adapt to the new distance education situation (Sokal, et al.Eblie Trudel, & Babb, 2020).

Social Emotional Health

The research employs the notions social emotional health (Furlongs, 2014, Gajdasova, 2018, as mentioned Svence et al., 2022)1) and resilience (Wagnild, 2016). The notion of social emotional health has developed from the notion of mental health, which is also now used by some researchers. Mental health is defined as such a situation of well-being in which the individuals may realize their potential, may cope with the stress of everyday life, are able to work productively as well as may contribute to society. Researchers have suggested defining mental health as a total of positive feelings and life (Furlong et al., 2014). In 2014 Michael Furlong together with his group of researchers designed Social Emotional Health Survey (SEHS). This survey allows measuring four constructs forming social emotional health (SEH) and the total SEH factor (Boman et al., 2020). The main principle of SEHS is related to the assumption that the individual's feeling of psychological flourishing is partly based on the living conditions, which contributes to the disposition of internal cognition, i.e. creates individual schemes. These schemes are related to the individual's confidence about oneself, others, about emotional competence and resilience (Furlong et al., 2014).

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He refers to the total SEH factor as Covitality, which in its meaning is the same as well-being or psychological well-being (Timofejeva, et al., 2016).

In another study in 2014 social emotional health is defined as the ability to regulate emotions, for example, the ability to regulate and control emotions, and emotional intelligence that is expressed as the ability to recognise emotions and use them constructively.

Studying scientific literature on teachers' social emotional health, teachers' well-being and mental health are mentioned most frequently (Aelterman et al., 2007) define it as a positive emotional condition which is a result of harmony between the sum of environmental factors, on the one hand, and teachers' personal needs and hopes, on the other hand. Other researchers have also used this definition, for example. Brichero et al. (2009). Acton et al. (2015) define teachers' well-being as "individual personal professional fulfilment, feeling of satisfaction and happiness that develop when collaborating with colleagues and students".

Resilience

In research literature the notion of resilience is defined in several ways. Mostly, it is the individual's ability, as a personality feature or a dynamic process. If resilience is an individual's ability, then it is the ability to overcome adverse life experiences, to adjust, to renew and continue successful functioning after hard and difficult life events (Svence, 2015). Resilience also includes the individual's ability to increase the competence while overcoming adverse conditions (Bobek, 2010). This quality allows teachers to continue their pedagogical practice (Brunetti, 2006, as mentioned in Beltman et al., 2011). Researchers have discovered that teachers' resilience is the ability and skill to adapt and recover after difficult situations that is reinforced by individual factors, for example, high self-efficacy, high motivation, ethical goals, flexibility and sense of humour (Price, et al. Mansfield & McConney, 2012), as well as some social factors related to teacher's work, for example, the ability to work effectively according to the administrative team management (Price et al., 2012), mentor's support. It is also affected by a favourable psychological climate at school (Gibbs & Miller, 2014), good relationships with colleagues (White, Peters, 2011), positive evaluation of the teacher's professional performance, material security and professional development opportunities (Crosswell & Beutel, 2013).

Burnout

When studying the phenomenon of emotional burnout, Maslach has concluded that emotional burnout is related to sustained response to chronic emotional and interpersonal stress factors at work (Maslach et al., 1996; Maslach & Leiter, 2016). Emotional burnout comprises three main factors:

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1. Emotional exhaustion, which is explained as a feeling of huge emotional drain and work overload, which may also interact between themselves; careless attitude to the people around and a feeling that everything a person is doing is useless. Emotional exhaustion derives from extensive intensity of feelings and a feeling of disappointment; the employees develop a feeling that they will not be able to work the way they did up to now. Emotional exhaustion is also mentioned as the main component of the burnout syndrome. In especially tough cases, a person may experience a nervous breakdown. Emotional tiredness and lack of emotions are mentioned as the most characteristic feelings when experiencing emotional exhaustion. (Schwarzer et al., 2000).
2. Depersonalization. This term involves a cynical, callous attitude to other people. The employee becomes impersonal and formal when contacting other people, clients, colleagues, and the management. The employee develops a desire to distance from executing the work duties and creates a negative and exaggerated idea about the execution of work duties (Maslach et al., 1996). The employee feels negative emotions against other people, especially the ones that they must contact on daily basis, like students, students' parents, or clients (Kahn, 1992).
3. The lack of personal achievements can be characterised as a general dissatisfaction with what has been accomplished or achieved. Disappointment in oneself, feeling oneself as worthless and perceiving oneself negatively from the professional point of view may also be expressed. The feeling of the lack of personal achievements is developed when there exists a feeling of hopelessness from the fact that teachers feel that they cannot teach anything to the students anymore (Maslach & Leiter, 2016). Research approves that these three dimensions of burnout are different and reflect the multidimensional essence of the construct of emotional burnout. (Byrne, 1994; Lee & Ashforth, 1996).

Emotional burnout is studied in the context of work-related stress. K. Maslach with her colleagues W. Schaufeli and M. Leiter define emotional burnout as a sustained response to chronical emotional and interpersonal stress factors at work and indicate that its expressions include the dimensions of exhaustion, cynicism, and professional inefficiency (Maslach et al., 1996;2001; Maslach & Leiter, 2016).

Teacher Work Engagement

The teacher work engagement model was developed by Klassen and his colleagues (Klassen et al., 2013). To research better teacher engagement, 4 components were included: cognitive engagement, which characterises teachers' attention span and level of effort while performing the duties; emotional engagement, which characterises the teacher's positive emotional reactions at the workplace; social engagement: students, which characterises mutual relationships between

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the students and the teacher; social engagement: colleagues, which characterises teachers' engagement in relationship with their colleagues (Klassen et al., 2013).

Work engagement comprises personal interest in one's work and pleasant feelings about the work process itself (Van Beek et al., Hu, Schaufeli, Taris & Schreurs, 2012). Researchers characterise work engagement as a positive and persistent emotionally cognitive and motivational condition that affects various psychic processes of the personality and determines the person's attitude to work and participation in this process (Schaufeli & Bakker, 2004). Researchers define teacher work engagement as "a motivational conception that has to be attributed to the voluntary distribution of the individual's personal resources when performing the duties determined by the teacher's professional role" (Klassen et al., 2013, p. 34, referring to Christian, Garza & Slaughter, 2011). When analysing results of the research in the field of education, there have been named three main reasons that justify the researchers' interest in teacher work engagement:
1) promote students' academic achievements and involvement in the learning process;
2) better cope with work-related stress and emotional burnout;
3) more frequently take active roles in the workplace and contribute to school life (for example, support the colleagues). (Klassen et al., 2013).

Methodology

Research questions

The research questions put forth in this study:
1. What content units indicate to teachers' emotional health indicators – emotions and feelings, when working by distance?
2. Which of the variables (burnout, work engagement strategies) most significantly predict teachers' social emotional health indicators?

Samples

The paper summarises results of four studies of teachers, conducted in Latvia from 2019 till 2021 under the guidance of the author of the paper, University of Latvia professor Guna Svence within the context of both COVID-19 pandemic during the remote teaching and the international research Erasmus + project "Teacher resilience: problems and solutions. Supporting teachers to face the challenge of distance teaching" No. 2020-1-LV01-KA226-SCH-094599. Therefore, the samples are denoted by *N1* = 23 (Kalniņa, 2021), *N2* = 635 (Erasmus + project "Teacher resilience: problems and solutions. Supporting teachers to face the challenge of distance teaching" No. 2020-1-LV01-KA226-SCH-094599Pakse & Svence, data 2021), *N3* = 380 (Birkāne & Svence, 2019), *N4* = 245 (Lagzdiņa, 2021).

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Methods

Several methods were applied in both parts of the research. The present paper looks at part of the gathered data. It analyses the data obtained in the studies that applied the following methods: Social Emotional Health Survey for teachers (Social-emotional Health Survey – Teachers, Furlong & Gajdosova, 2018, as mentioned in Svence et al.,2021), K. Maslach's Burnout Inventory – General Survey (Maslach Burnout Inventory – General Survey, MBI – GS, Maslach, Jackson & Leiter, 1996), Engaged Teacher Scale (Engaged Teacher Scale, ETS, Klassen et al., Yerdelen & Durksen, 2013), RS (Resilience Scale, Wagnild & Young, 1993, adapted during Erasmus+ project "Teacher resilience: problems and solutions. Supporting teachers to face the challenge of distance teaching" No. 2020-1-LV01-KA226-SCH-094599, data 2021).

Social Emotional Health Survey – Teachers (SEHS-T)

SEHS-T (Social Emotional Health Survey – Teachers) was employed to study the social emotional health of the teachers of Latvia. SEHS-T has not been previously adapted in the EU. The survey was selected because it corresponds to the school sector and the aim of this project – it studies teachers' social emotional health. The survey comprises several subscales which characterise teachers' social emotional health. SEHS-T consists of 48 statements, where each of them has to be evaluated on Likert scale from 1–6. The survey questions form 12 subscales, each containing 3 questions, and 4 scales – each containing 12 questions. The minimum number of points a respondent may receive on each scale is 12, but the maximum – 72, whereas on every subscale the minimum number of points is 4, the maximum – 24. As the survey is not standardised, the data obtained in it can be compared only with the potential arithmetic averages, which are 41 points on each scale and 14 points on each subscale accordingly. The initial measurement with the focus group ($N = 635$) indicated that in the sample of Latvia the SEHS-T scores are moderately high. The averages in the entire sample do not show the individual low scores of some teachers. Overall, it can be assumed that in the given sample teachers' SEHS-T scores are moderately high or even high.

At the same time, it can be observed that the proportionally lowest scores are on the scale Self-belief and its subscale Persistence.

The first research question about SEHS-T data that approve difficulties in the sample of the teachers of Latvia has not been verified. The teachers of Latvia do not exhibit reported difficulties in this survey.

Resilience Scale

Resilience Scale (RS) scores range from 25 to 175. Scores greater than 145 indicate moderately high and high resilience, scores from 116 to 144 indicate moderately low to moderate levels of resilience, and scores from 115 and below

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indicates low resilience (Wagnild, 2016, p. 82). Resilience Scale (RS) was used separately in Latvian sample and in Slovak sample.

Resilience short version Scale RS-25 scores from 14 to 98. Scores above 82 indicate moderately high and high level of resilience, scores from 65 to 81 indicate moderately low to moderate resilience, and scores from 64 and below indicates low resilience. Short version RS-25 was used in the whole sample. Cronbach alpha is 0.889.

Table 1. Results from Resilience scale of the sample of Latvia (*N* = 400)

Resilience – categories					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Low	11	2.8	2.8	2.8
	Low	58	14.5	14.5	17.3
	On the Low End	124	31.0	31.0	48.3
	Moderate	144	36.0	36.0	84.3
	Moderately High	56	14.0	14.0	98.3
	High	7	1.8	1.8	100.0
	Total	400	100.0	100.0	

Most scores of the sample of Latvia are located at the level of moderate resilience scores. Low and very low resilience scores are shown by almost 18% of the sample. More than 15% demonstrated high resilience scores.

Burnout scale

To operationalise the emotional burnout construct, in 1981 Christina Maslach and her colleague Susan E. Jackson developed an instrument – methodology "Maslach Burnout Inventory, MBI" which comprises all three burnout dimensions. Currently, five MBI modifications are used in research. They have been developed over the years and are meant for representatives of several professions: social professions, medical staff, teachers, the General Survey and the General Survey for Students.

The General Survey (Maslach Burnout Inventory – General Survey, GS; Maslach, Jackson & Leiter,1996) comprises fewer questions (16 questions) in difference from the initial version (22 questions); the questions are more general and are not aimed at a particular professional context. The second subscale MBI-GS is defined as cynicism (the component is characterised by cynicism and alienation from work; Maslach & Leiter, 2016), but the third subscale – as professional efficiency (burnout is characterised by the feeling of inefficiency and reduction of professional achievements; Maslach & Leiter, 2016). According to K. Maslach's model, low scores on the third subscale indicate to high burnout and inefficiency, but high scores – to professional efficiency and work engagement.

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The present study employed K. Maslach's 16 question Burnout Inventory – General Survey (Maslach Burnout Inventory – General Survey, MBI – GS, Maslach, Jackson & Leiter, 1996; adapt. D. Caune, 2004, as mentioned Birkāne & Svence, 2019). The survey measures three dimensions (components) of emotional burnout: exhaustion, cynicism, and professional efficiency. Within the framework of the study, Cronbach alpha for Burnout Inventory exhaustion scale is 0.89, for cynicism scale it is 0.82, and for the professional efficiency scale it is 0.83, which indicates to good reliability for scales.

Teacher Work Engagement Scale

Analysing the structure of the factors of teacher work engagement, a scale to measure teacher work engagement was developed as a result. The scale comprises four components – teacher work engagement factors, and it consists of 16 statements – 4 statements for each factor. The structure of ETS:

1) Cognitive Engagement – characterises the level of the teacher's attention and efforts while performing the professional duties.
2) Emotional Engagement – characterises the teacher's positive emotional reactions at work.
3) Social Engagement: Students – focuses on the aspects of the mutual relations between the teacher and the learner – pupil or student.
4) Social Engagement: Colleagues – characterises teachers' involvement in relationship with colleagues (Klassen et al., 2013).

Within the framework of this study, Cronbach alpha is 0.83 for teachers' Cognitive Engagement, 0.88 for Emotional Engagement, 0.75 for Social Engagement: Students and 0.75 for Social Engagement: Colleagues, which means that combining the survey questions in scales is reliable. Cronbach alpha for work engagement for all questions is 0.91, which indicates that all questions measure teacher work engagement.

Results

A summary of teachers' well-being during distance learning is shown in Table 2. Results from the research denoted with *N1* = 23 (Kalniņa, 2021, as mentioned in Svence et al., 2021) indicate that the most frequently mentioned category in a positive context is the category of teachers' self-efficacy to cope with changes and challenges, as it was mentioned by 11% (or 10 respondents) of the focus group teachers in the content units. Table 2. Summary of teachers' sense of self during teaching by distance (as mentioned in Svence et al., 2021).

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Table 2. Summary of teachers' sense of self during teaching by distance (as mentioned in Svence et al., 2021)

	Categories	%	Examples of content units
Teacher autonomy	Curriculum determination autonomy	8	"It is more difficult to offer a teaching process based on my ideas, to show visuals."
	General teaching autonomy	12	"I cannot control what the child is doing behind the screen, I have many children in the classroom, and their cameras are often switched off because they are home alone."
Teachers' self-efficacy	Instruction	3	"There is an opportunity to teach more by distance."
	Adapting education to the students' individual needs	3	"Weaker individual connection with the student, which reduces the child's responsibility during the learning process."
	Student motivation	13	"Part of students perceive distance learning very frivolously, I can very little impact on students' motivation."
	Maintaining discipline	10	"Positive experience is the students' politeness online and in writing. In distance learning even the naughtiest students have become especially polite, even humble, especially in correspondence."
	Cooperation with colleagues and parents	13	"Intolerance, dissatisfaction from parents, lack of support, parents who, when writing letters or complaints, do not think about teachers as persons having children who are also learning by distance."
	Cope with changes and challenges	11	"Taking into consideration the current circumstances and restrictions, I think I feel comparatively very well."
Emotional burnout	Exhaustion	16	"Work has occupied the entire day and even weekends; thus, I feel that exhaustion is approaching."
	Cynicism/ Depersonalization	5	"Depressive mood appears, do not fulfil the tasks. Radical. Sometimes the teacher can also feel unreal."
	Professional effectiveness	6	"I feel I am more vulnerable than previously, sometimes I also feel powerless and that is what I dislike most. I am used to solving cases fast and efficiently, as well as conflicts, to providing support and assistance to my students."

In this category, the content units in which the teachers answered that they were able to adapt to the changes and overcome the challenges of the distance learning process were analysed (example from the content units: "Overall, I feel pretty good because I'm used to this situation. I've learned a lot in the field of technology and I'm still doing it.").

The second most frequently mentioned category in a positive context is maintaining the discipline of teachers' self-efficacy, which was mentioned by 7% (or 6 respondents) of the total sample. As the third, in a positive context, the teachers' autonomy category of curriculum determination autonomy is most often mentioned – by 5% (or 5 respondents) of the total ample. Teachers' self-efficacy

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category Cooperation with colleagues and parents was mentioned in a positive context by 4% (or 4 respondents). 3% (or 3 respondents) mentioned in a positive context the content units that correspond to the general teaching autonomy of teachers. 2% (or 2 respondents) mentioned content units that correspond to the category of teacher self-efficacy of student motivation in a positive context. The least frequently mentioned categories in a positive context, each only 1% (or 1 respondent), are the categories of teachers' self-efficacy – instruction and adapting education to students' individual needs, as well as the emotional burnout category of exhaustion. Content units corresponding to the categories of emotional burnout, cynicism/depersonalization, and professional effectiveness, were not mentioned in a positive context in the narratives of the focus group of teachers.

The next example of the research is $N4 = 245$ (Lagzdiņa & Svence, 2021), which indicates that the scale of teacher work engagement Cognitive Engagement ($p < 0.001$) is significant in predicting SEH-T scores. This means that this scale, or its characterizing feature, statistically reliably affects the Teachers' SEH-T scale "Trust in others".

The results reveal the significance of Cognitive Engagement when predicting the SEH score. The more intensively, with mental effort, the teacher concentrates on performing the duties cognitively, the worse the teacher can further regulate and control the emotions and their expressions. The changing circumstances and the challenges teachers face during teaching by distance even more create anxiety and tiredness in the teacher's profession (Ferdig et al., 2020).

Table 3. Summary of the results of linear regression models (Lagzdiņa, 2021, as mentioned in Svence et al., 2021)

		Self-belief	Trust in others	Emotional competence	Passionate way of life
R^2		0.00	0.16	0.05	0.09
Scales*	**Cognitive engagement**	−	+	−	−
	Emotional engagement				
	Social engagement: students	−			−
	Social engagement: colleagues				
R^2		0.01	0.05	0.19	0.40
Scales*	Exhaustion				
	Cynicism	−	−	−	−
	Professional efficiency	−		−	−

* "+" marks the scales that are statistically reliable to impact or predict the quantity.

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The results demonstrate that in the teacher work engagement scale Cognitive Engagement is significant because it is the only one that statistically somewhat significantly predicted SEHS-T, namely the indicator "Trust in others". Daily work in a distance regime has increased the distance between teachers and their relationship with colleagues; therefore, irritation and difficulties to control one's emotional expressions have arisen.

The next example (Birkāne & Svence, 2019) statistically reliably shows total burnout – it affects teacher work engagement by 29.45%. It is observed that Cynicism and Professional efficiency indicators are statistically significant in the model. The Table also demonstrates that resilience indicators Self-organisation and Life acceptance predict teacher work engagement by 28.72%.

Table 4. Results of the linear regression model, affecting the data of teacher work engagement (Birkāne & Svence, 2019)

Impact factor	R^2	F	B	β
Resilience indicators				
Constancy	0.29	50.49 ***	28.00	
Self-organisation			0.56	0.34 ***
Self-reliance			0.05	0.03
Life acceptance			0.42	0.22 **
Burnout indicators				
Constancy	0.29	52.31 ***	69.36	
Exhaustion			−0.25	−0.05
Cynicism			−2.60	−0.36 ***
Professional efficiency			3.17	0.32 ***

Thus, the burnout indicators, such as cynicism, negatively affect teacher work engagement: the higher cynicism, the lower work engagement, and the higher professional efficiency, the higher work engagement. Whereas resilience indicators demonstrate: the higher teachers' self-reliance and self-organisation, the higher work engagement.

All other calculations also conclude that exactly these resilience indicators predict teacher work engagement and are related with other work engagement indicators. Similarly, the mentioned burnout indicators – cynicism and professional efficiency are inversely proportional to predict work engagement.

Further on the paper deals with the result which from the work engagement measurement scale *Social Engagement: Colleagues* matches SEHS-T scale "*Trust*" and "*Colleagues' support*".

As the results of the below provided regression analysis table demonstrate, resilience indicators *Self-organisation* and *Life acceptance* are most closely related to social engagement with colleagues, while cooperation with colleagues is

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affected with a minus sign by the *Burnout* indicators *Exhaustion* and *Cynicism*. At the same time, *Professional efficiency* predicts positively engagement with colleagues.

Table 5. Linear regression model for the significance of the subscale Social Engagement: Colleagues impacting work engagement (Birkāne & Svence, 2019)

Impact factor	R^2	F	B	β
Resilience test				
Constancy	0.19	29.18 ***	7.08	
Self-organisation			0.14	0.29 ***
Self-reliance			−0.04	−0.07
Life acceptance			0.14	0.24 **
Maslach's Burnout Inventory				
Constancy	0.14	29.18 ***	17.78	
Exhaustion			−0.31	−0.15 *
Cynicism			−0.36	−0.17 **
Professional efficiency			0.59	0.20 ***

Discussion

In the pandemic period the mental health of population starts to be of significant focus of European, state and government authorities. Mental health with an emphasis on the social emotional health of students and teachers at schools becomes of particular interest. Only teachers with good mental health can support and improve mental health of their students in every type of school.

Many studies have been conducted to find out the students' social emotional health (Halle & Darling-Churchill, 2016), but so far, less research is performed to study the teachers' social emotional health (SEH) (Snowden et al., 2015), as well as there is a lack of scientifically justified research methods and national support programmes for teachers on social emotional health of education professionals.

Communicating and receiving support at the workplace from at least one colleague, teachers can better focus on the work and perform their professional duties more qualitatively, which also corresponds with previous research that work engagement correlates positively with such organisational resources as colleagues' support, receiving feedback about the work outcomes (Bakker et al., 2008).

When teachers identify with their workplace – feeling themselves as a part of the whole, the feeling of belongingness is created, and teachers apply more effort and try to execute better their professional duties at the workplace, which corresponds to research – if the feeling of belongingness to the workplace is

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raised, engagement in executing work duties increases (Urdan & Schoenfelder, 2006), and the feeling of belongingness to the team correlates positively with work satisfaction and self-efficacy (Skaalvik & and Skaalvik, 20161). The more intensively, with mental effort, the teacher concentrates on executing the work duties cognitively, the worse the ability to further regulate and control one's emotions and their expressions. The changing circumstances and challenges that teachers face during distance teaching even more create anxiety and tiredness in the teacher's profession (Ferdig et al., 2020).

Working daily in a remote teaching regime, the distance between the teachers and their relationship with colleagues has increased, thus also irritation and difficulties to control their emotional expressions arise. Other research also mentions that the teacher feels unhappy and emotionally unstable if colleagues' support or feedback about the work outcomes is not received (Bakker et al., Schaufeli, Leiter & Taris, 2008). There is negative correlation between teachers' empathy and exhaustion and cynicism. Other research also indicates that in the case of emotional and physical exhaustion, a person will most likely not be able to provide emotional support and will not be empathic to others (Nyatanga, 2014). The changing circumstances and challenges that teachers are currently facing even more create anxiety and tiredness in the teacher's profession (Ferdig et al., 2020).

If teachers feel emotionally tired, exhausted, and cynical, accordingly, they cannot be emphatic to the people around them. Teachers must try to be emphatic (the work takes place at cameras which frequently are not switched on), and teachers may not be judgmental of students although they sometimes feel like that. In difference from face- to-face teaching, the feedback about the work is not received immediately if students frequently do not switch on their cameras.

When doubts about the professional abilities increase, failing to succeed and receive feedback and trying too hard, teachers feel how their ability to regulate their emotional expressions reduce or that it is more difficult to control their emotions. Previous research mentions that a burnt-out teacher feels negative emotions toward other people, especially to those who need to be contacted on daily basis: students, students' parents (Kahn, 19922006).

Teacher work engagement is predicted negatively by cynicism, the emotional burnout indicator: cynicism explains 29.45% ($p < 0.001$) of the total teacher work engagement rate, 20.12% ($p < 0.001$) of the cognitive work engagement rate, 27.96% (p<0.001) of the emotional work engagement rate, 20.34% ($p < 0.05$) of the social engagement with students and 14.46% ($p < 0.01$) of the social engagement with colleague's rate. Exhaustion may predict 14.46% ($p < 0.05$) of the social engagement with colleague's rate. Demographic indicators statistically reliably (PR > 0.05) do not predict higher teacher work engagement rates.

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Barriers to Employment for Young Adults with High-Functioning Autism (HFA)

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ABSTRACT

The workplace participation of individuals with high-functioning autism (HFA) continues to be a challenge. The purpose of this article is to explore the experiences of young people with HFA in finding and keeping a job, with a particular focus on existing barriers to employment. Research seeks to answer two research questions. First, what barriers to employment and to keeping a job are identified by some young adults with HFA and their mothers during the job-seeking process? Second, what are the ways to overcome those barriers? In this this small-scale qualitative research three individuals with HFA with employment experience and their mothers participated in semi-structured interviews to reflect upon their job-seeking and job-finding experiences. The results show that the identified barriers that young people with HFA faced both when looking for a job and when in the working environment were successfully overcome, and they cannot really be considered as barriers or limitations for particular individual. However, we found several obstacles that were common to people with HFA. Obstacles both in finding and keeping a job that were directly related to the disorder were identified, for example, in the occurrence of sudden changes at work, unpredictability, uncertainty, and multitasking. There were identified effective ways to overcome difficulties and specific characteristics which are common for people with ASDs which can even be an advantage in employment are discussed.

Keywords: high-functioning autism, autism spectrum disorder, young adults, barriers to employment, overcoming barriers

Introduction

The Universal Declaration of Human Rights (1948) proclaims that everyone has the right to work and the right to protection against unemployment. The Charter of Fundamental Rights of the European Union also guarantees the right for everyone to engage in work (European Union, 2000, Article 15). Thus, European

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countries are continuing the shift in focus toward a social and anti-discrimination approach to the employment of people with disabilities. Unfortunately, neither of the policies has assured the complete inclusion of people with autism spectrum disorders (ASDs) in the European labor market (Bunt et al., 2020). Internationally, high rates of unemployment among young adults with ASDs have been repeatedly highlighted (Roux et al., 2013; Scott et al., 2019). Adults with ASDs have more difficulties and disadvantages when searching for jobs and experience problems even when they are employed. Even young adults with high-functioning autism (HFA) who are considered as persons who have higher personal capabilities compared to other forms of autism and have a good education have problems with getting a job, and they do not reach high employment rates (Hendricks, 2010; Vogeley et al., 2013; Baldwin et al., 2014).

HFA is used to describe individuals with higher functional capabilities compared to those with other forms of autism. Individuals with HFA have average or above average intellectual capacity. At the same time, they can experience challenges with social interaction and communication, and they may have restricted and stereotyped patterns of behavior, interests, and activities (American Psychiatric Association, 2013). According to Richards (2015), Asperger syndrome is widely viewed as being at the "high-functioning" end of a wider spectrum of autistic conditions.

Young people with HFA have a deficit in their social cognition, which can have a significant impact on their interactions with other people and can affect their integration into the workforce. The unemployment and underemployment of persons with HFA poses social, health, and economic issues both at an individual level and for the community (Hayward et al., 2018), it can have a negative impacts on economics (Nicholas et al., 2019). Indeed, employability is one of the predictors of quality of life for autistic adults (Mason et al., 2018). In contrast, employing them can promote economic benefits for the community and businesses (Knapp et al., 2009). Young people with ASDs can face significant transition barriers when entering the world of work and have specific transition needs (Griffiths et al., 2016). Nevertheless, there are cases where persons with ASDs can be successful in competitive, entry-level employment (Hillier et al., 2007). There are many personal advantages for young adults with HFA who are employed, such as improved physical abilities, cognitive abilities, and social skills (Stephens et al., 2005). Young adults with HFA can also be quite useful in the workplace due to the skills, abilities, and personal characteristics they have; furthermore, they can offer a specific autistic perspective to their employer (Cope & Remington, 2022).

The purpose of this study is to explore the experiences of young people with HFA in finding and keeping a job, with a particular focus on existing barriers to employment. As there is a growing population of young people with HFA completing general education in Latvia, more and more adolescents and young

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adults will be entering working life either in the summer for short-term employment or after completing their secondary education or higher education studies. Therefore, further knowledge would be helpful to better understand employer perspectives and guide employers' capacity for engaging and supporting individuals with HFA in the workplace (Nicholas et al., 2019). Furthermore, this is the first such research that has been carried out in Latvia, and therefore it is important for the Latvian context and can also bring some new aspects to the international debate about people with HFA finding and keeping a job.

There are two research questions we would like to explore. First, what barriers to employment and to keeping a job are identified by some young adults with HFA and their mothers during the job-seeking process? Second, what are the ways to overcome those barriers and integrate them in the workplace?

Theoretical background

Shahin and colleagues (2020) conducted a scoping review to investigate environmental facilitators and barriers relevant to workplace participation for young adults aged 18–35 with brain-based disabilities. The majority of the studies (77%) highlighted factors in the services, systems, and policies domain, such as inclusive and flexible systems and well-defined policies at the organizational level. Social support, mainly from family, friends, employers, and colleagues, was reported as a facilitator (68%), followed by physical accessibility and, finally, the availability of assistive technology (55%). The attitudes of colleagues and employers were mostly seen as a barrier to workplace participation (48%).

Personal factors and symptoms associated with ASDs have been found to adversely impact employment (Holwerda et al., 2012). Harmuth and colleagues (2018) distinguished three main barriers that hinder young adults with ASDs in workplace employment success:

- Person-related barriers, such as obsessive adherence to routine and resistance to change;
- Environment-related barriers, such as a lack of long-term workplace support programs or a lack of access to such programs and the negative attitude of employers, managers, and coworkers, which can heighten existing social anxiety;
- Work-related barriers, which relate to the job itself and the required tasks, such as low wages, poor conditions, shortened hours, and/or no opportunities for growth.

Bury and colleagues (2021) explain that work task barriers are those that an individual with ASDs can experience while completing work tasks and completing social tasks that are related to their work. People with autism experience

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difficulties with interpreting work protocols and the behavior of others and have problems with personal executive functions.

Autistic employees have mentioned several barriers to success: a difficulty with focusing, being fatigued by high levels of social interaction, and needing notice about events in advance (Flower et al., 2019; Bury et al., 2021). Bury and colleagues (2021) revealed that types of social challenges for ASD employers were individually oriented or associated with the work environment. Individuals also faced barriers when learning how to engage in social situations in the workplace or in work relationships.

Researchers have reported that social, emotional, and communication difficulties in human interaction are barriers that are frequently experienced by autistic employees (Lorenz et al., 2016; McKnight-Lizotte, 2018; Soaker, 2020). Bross and colleagues (2021) found that there are several barriers to employment for individuals with ASDs: pre-employment challenges, logistics, little on-the-job support, and a disconnect between interests and job tasks. These barriers can also include mental health issues, a significant decrease in services following high school completion, and a lack of communication and collaboration across stakeholders and settings (Griffiths et al., 2016).

Young adults with HFA can have both certain strengths and limitations due to their developmental difference. Specifically, problems can arise because of impaired communication and social skills that are vital for the workplace. Hayward, McVilly, and Stokes (2018) reported that the principal challenges for individuals with HFA at work were communication, social interaction, and stress, together with poor mental and physical health.

According to Richards (2015), most barriers and subsequent discrimination appear because employers have difficulties in reflecting the needs and interests of people with HFA. Young adults with HFA in work-related situations may struggle with several important issues:

- the idea of others having thoughts and feelings different from their own;
- executive functioning;
- information processing;
- overload from light, texture, tastes, and/or smells, which can lead to a temporary breakdown in the nervous system (Richards, 2015).

Finally, Mai's study (2019) found that employers' beliefs were the primary barrier to their selection of qualified autistic candidates to fill open positions.

Thus, young adults with HFA can face several barriers throughout the employment process – at the recruitment phase, during the selection stage, and during their employment. The barriers can be related to the person with HFA or to the employers/hiring agents.

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Methodology

Participants

To be included in this study, young adult candidates had to have participated in the labor market during the study or before they had employment experience. Those who have already completed their university studies, those who are still studying, those who have both long-term jobseeker and work experience (at least 3 years), and those who work short-term jobs (for example, in the summer) were all eligible for inclusion. An important element for inclusion in the study was that the participants identified themselves as a person with HFA. The recruitment process involved contacting the Autism Society of Latvia, and the researchers spread information and invitations for participation through the society's Facebook page. Therefore, the candidates were found through parents (specifically mothers) who are members of the Latvian Autism Society and have access to the Facebook group (followed by over 3,000 people at the time). Mothers forwarded the request for participation to their children. Unfortunately, we only managed to receive three positive responses; all of whom fulfilled the inclusion criteria (see Tables 1 and 2).

Table 1. List of participants (persons with AST/HFA/Asperger's)

Name	Age	Sex	Education	Professional experience	Length of professional experience	Living condition	Age at which condition was identified/ diagnosed
Jānis	26	Male	Master's degree	Tour guide	4.5 years (two workplaces)	With mother	13
Roberts	18	Male	Vocational secondary education	Project work/IT	4 years (part-time)	With mother	4
Ernests	18	Male	Vocational secondary education	Assistant, to social pedagogue, social services	Three months (summer period)	With mother	10

Table 2. List of participants (parents of persons with AST/HFA/Asperger's)

Name	Age	Role	Education
Evita	53	Mother of Jānis	Higher
Dace	43	Mother of Roberts	Higher
Laura	(did not want to provide the data)	Mother of Ernests	–

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Ethical issues

Participants gave their informed consent to the study. All names have been changed to ensure the participants' anonymity. Ethical approval was granted through UL Humanities and Social Sciences Research Ethics Committee.

Data collection

After semi-structured interviews were prepared by the first researcher, the second researcher, who has experience working with HFA people and has a professional background in special education, examined the questions. Open-ended questions were added to make the interviews more flexible. The semi-structured questions were structured around the following topics: job-finding experience, working experience, keeping a job, difficulties related to ASD/HFA/Asperger's in finding and keeping a job, and ways to overcome the difficulties.

The questions were almost identical for the young adults and their mothers. For example, if we asked the son about his experience in finding a job, we asked his mother the same question as she could tell us about her son's experience in finding a job. The interviews lasted between 18 and 29 minutes. The second researcher and the respondents chose the location for the interviews. Two interviews (with mothers) were organized online using Zoom and Microsoft Teams, while the others were face-to-face interviews. The interviews opened with the researcher reading an informed consent document to the interviewees that included participation eligibility criteria and the purpose of the study. It was read to the interviewees. Participants were informed that their responses would be anonymous. All interviews were audio recorded and transcribed. The completed transcriptions were reviewed and checked for errors, and then the interviews were anonymized by the second researcher, who excluded words that could allow the interviewed persons to be identified (for example, the workplace name). After that, the transcriptions were analyzed by the first researcher.

Data analyses

Qualitative research is especially suited to exploring new topics where there is not enough existing knowledge (Creswell, 2013). We, as researchers, wanted to emphasize the unique subjective experience of young people with HFA and their mothers by exploring their views of barriers to employment, thus using a phenomenological method without pre-established theories. The data were analyzed using content analyses. We chose an inductive (data-driven) and idiographic (individual-focused) approach, as there is not enough knowledge about the research topic to do otherwise, especially in the Latvian context. As suggested by Elo and Kyngäs (2008), units of analysis were selected in the inductive content analyses during the preparatory phase. Three interviews with young adults with

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HFA and three interviews with their mothers were analyzed. The preparation phase was followed by the organization phase, where the open coding of relevant quotes to support codes was carried out, followed by creating categories and abstraction (see an example in Table 3).

Table 3. Example of analyses

Quote	Sub code	Code	Abstraction
"The obstacle has been the lack of that work experience. Because, for example, there are jobs where it is required to have some years of work experience there" (Jānis, age 26)	Insufficient previous experience	Barrier experienced by every young adult jobseeker	Barrier to getting a job

While reading the transcriptions, the researcher took notes and wrote down headings. The text was read several times. After that, the categories emerged from the headings. Finally, some abstraction was carried out to answer the research questions and a mind map was created. This process did not involve the use of any specific software. At the end, a dialogue between the two researchers was set up to agree on the way in which the data should be analyzed and the results organized. The researchers met several times to discuss and review the results. This resulted in several themes for answers to each research question.

A thematic analysis was conducted to explore the research question, following the steps specified by Braun and Clarke (2006) as a guideline. This required a thorough familiarization with all interviews, the creation of initial codes and candidate themes, and refining and renaming them to identify the final themes to report.

As there were not many respondents, all the results are presented in the following section.

Results

Barriers identified by employees with HFA

While looking for a job

As Jānis' mother, Evita, pointed out, when looking for a job, it was important for her son to learn the skills to write a motivation letter and CV and fill out applications. Initially, until these skills were mastered, when applying for a job, her son received rejections from several places of employment. Realizing that such skills were missing, her son, with his family's support, purposefully developed those skills. Jānis himself said that his mother and grandmother helped him a lot as they corrected his applications and taught him how to write a CV, and by practicing, he learned how to write a good application himself. After that, Jānis not only managed to get a job but also applied for various scholarships.

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Jānis stated that the main obstacle was his lack of previous experience. Job advertisements often ask for previous experience and knowledge in a specific field, for example, knowledge of a specific language:

> *The obstacle has been the lack of that work experience. Because, for example, there are jobs where it is required to have some years of work experience there.* (Jānis, 26)

On the other hand, Ernests' mother said that the biggest difficulties were related to insufficient experience in the job search process itself. Her son initially sent his application to the employer but then did not check whether his application had been received at all, did not call the employer, and did not ask if he was hired. As Ernests' mother explained, it seems that he has good skills in searching for information, including on the Internet, but lacks specific skills in searching for a job, such as finding job offers on relevant websites and communicating in writing or by phone with the employer.

At work

The main difficulty in the workplace, as claimed by one of the young people interviewed, was the fact that several jobs had to be done at the same time, so-called multitasking:

> *Performing multiple tasks at the same time. If I start to do one task, then I do one and then the next one. That was the hardest thing.* (Ernests, 18)

Ernests' mother explained that the difficulties were caused by uncertainty due to a sudden change in the work environment:

> *Yes, it could be because of a drastic change of plan, change of workplace, change of working hours, non-observance of rules, non-observance of laws by others at the workplace. This could create a stressful situation for him.* (Laura, Ernests' mother)

Roberts' mother agrees with this statement, adding to the list of stressors by stating that difficulties are directly caused by unclear instructions and indirect communication (people with ASDs need to be told everything precisely and clearly), for example, about the results to be achieved:

> *Unclear instructions, lack of structure, uncertainty about what the results will be and how those results will be achieved.* (Dace, Roberts' mother)

Citing a well-known limitation for people with ASDs, Roberts' mother also underlines the fact that a young person with an ASD might be reluctant to change

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jobs or to look for something new, thus limiting their potential professional and personal growth:

> *He has difficulty modeling the future and imagining that it might be better else-where, that he should change jobs.* (Dace, Roberts' mother)

How to overcome employment barriers
While looking for a job

Jānis' mother explained in her interview that the most important thing when looking for a job was her son's positive mood. Her son was not afraid to try.

> *He is an optimistic person in any case; he knows that he is very good, very good … He is a very good worker. Very accurate worker. And he wasn't afraid that he wouldn't get a job. I was more afraid.* (Evita, Jānis' mother)

Jānis agreed with that and said that you have to be brave and not be afraid of failure. Jānis added that, hypothetically, a person should be able to communicate their special ASD problem to an employer so that "the employer understands and takes it into account in the future."

However, out of the three interviewed, two – Jānis and Roberts – indicated that they had not disclosed their problem to their employers and would not say anything in the future if they were not asked specifically. Ernests has not disclosed his diagnosis either, but he felt that he could reveal his disorder to his employers in the future.

Nevertheless, Jānis said in the interview that employers should be prepared to hire and work with professionals who have Asperger's syndrome. Jānis' mother explained that her son was hired for his first job by an employer from the USA. As Evita pointed out, in the USA, employers are used to working with people with ASDs and have both knowledge and experience of how to communicate with autistic people. Therefore, the employer understands and does not get angry about what the young person with ASD does not do or does differently. They understand that it is not because the individual is bad, lazy, or negligent, but simply that is characteristic of the disorder.

Jānis thinks that, in the future, employers should be specifically educated about ASDs and Asperger syndrome:

> *I would say that an external resource could be for psychologists to hold educa-tional seminars for employers about this issue of Asperger's.* (Jānis, 26)

In such workshops, it would be best to involve people who have ASDs or Asperger syndrome themselves so that they can share their personal experiences. Workshops should be based on practical examples and not on general theoretical

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statements. Such seminars should also be held for young people with Asperger syndrome, who could thus learn from positive examples.

Family also played an important role in job searches. First, the three mothers shared information with their sons and forwarded job advertisements and other useful information to them (Jānis and Evita). Secondly, they provided support for the preparation of motivation letters, CVs, and applications. Thirdly, one mother found a job for her son in her workplace (Roberts and Dace).

At work

The first factor that was mentioned by young adults that helped them successfully integrate into the workplace was the fact that, during childhood and while at school, they were taught by specialists and teachers about how to overcome various difficulties related to the specific characteristics that they had due to their ASD:

> *Already in my childhood, when I was diagnosed with all this, I was immediately taught all the most important things that must be taken into account, for example, when you communicate with people or when you come across such a social environment where people, for example, can misunderstand you.* (Jānis, 26)

Another important aspect for Jānis was that, even as a child, he learned to learn from every life situation, for example, to cooperate, to listen carefully to suggestions, and to follow them literally. In addition, he continues to learn and improve his competencies even now, participating in various personal development courses. Jānis explained that he has also learned to use help and ask for it if needed. The other two young adults identified this skill as important too. Therefore, teamwork can be very useful.

> *Working in a team can make you feel much safer because at least you have additional forces – experienced colleagues as mentors who can explain and help you in every way.* (Jānis, 26)

Although none of the young people had experienced having a specific mentor in the workplace, it could be useful, according to them. They also suggested asking for advice from more experienced colleagues:

> *I would advise those young people who have Asperger syndrome (be it in a strong or weak form) – don't be afraid, you have to try if you are hired, and if you have an experienced colleague there, don't be afraid. You can ask that colleague for advice, he will help you and explain.* (Jānis, 26)

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Another important aspect that was identified was that there should be stability in the organization where the young person with HFA works. It helps if the boss is constructive in the workplace, communicates in a very straight-forward way, specifically and accurately, and explains how to act at work, how not to act, and what the desired behavior is. It is important that the boss explains "*what we do and what we do not do under any circumstances*" (Jānis). It is important to have clear instructions and clarity in requirements not only so that the employee does not make a mistake but also so that he knows what he did wrong if he does. As Evita pointed out, "*frames*" are important for Jānis. The precision that is learned then helps her son to clearly meet the employer's requirements. What a young person can do themselves is to improve their professional knowledge. For example, they can learn independently before starting a working relationship.

Summary

As a result of the analysis, we identified an important theme: the inherent characteristics of ASDs that can help in the work environment. Both the young men and their mothers mentioned characteristics that are directly linked to ASDs but which can be very useful in the work environment. For example, Evita mentioned that her son likes to work in the same job and does not like to change. She explained that while her son has been working in one workplace for four years, several employees have already changed. The fact that he remains at this workplace is highly valued by the employer, who says that Jānis is very faithful and loyal to the workplace.

Roberts' mother, Dace, explained another characteristic. While young people with ASD have difficulties with multitasking, they can focus on one thing without taking into account the surrounding social stimuli instead. That could be important in a particularly stressful situation when others can become very emotional but the work nonetheless has to be done on time.

In summary, employees with HFA reported four specific employment barriers, but their mothers reported an additional six. Young adults with HFA mostly reported barriers during the job-seeking process, while mothers reported barriers during employment. Every young adult or adolescent who enters working life could experience some of these barriers, but some are specifically related to ASDs (see Figure 1).

Many positive solutions for overcoming the barriers mentioned in Figure 1 were found (see Figure 2). One relates to every young adult who is searching for a job, but the others are specifically ASD-related.
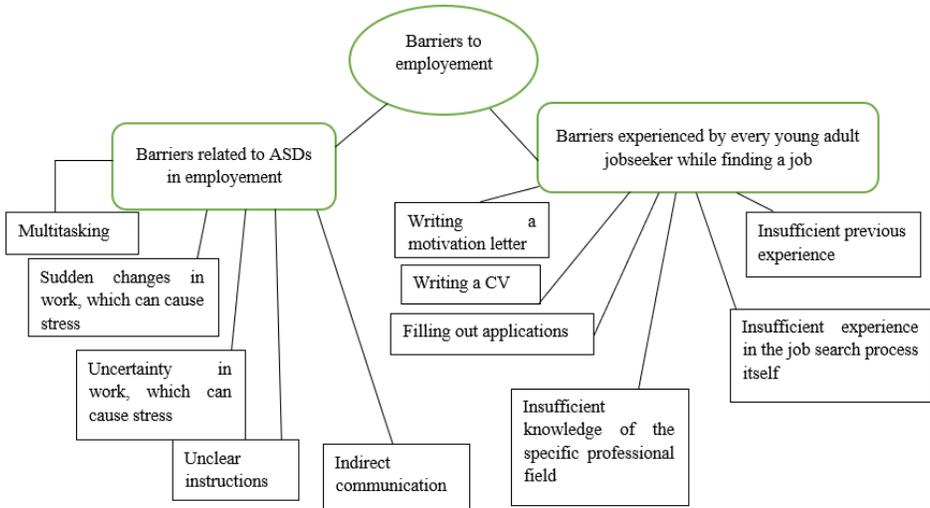
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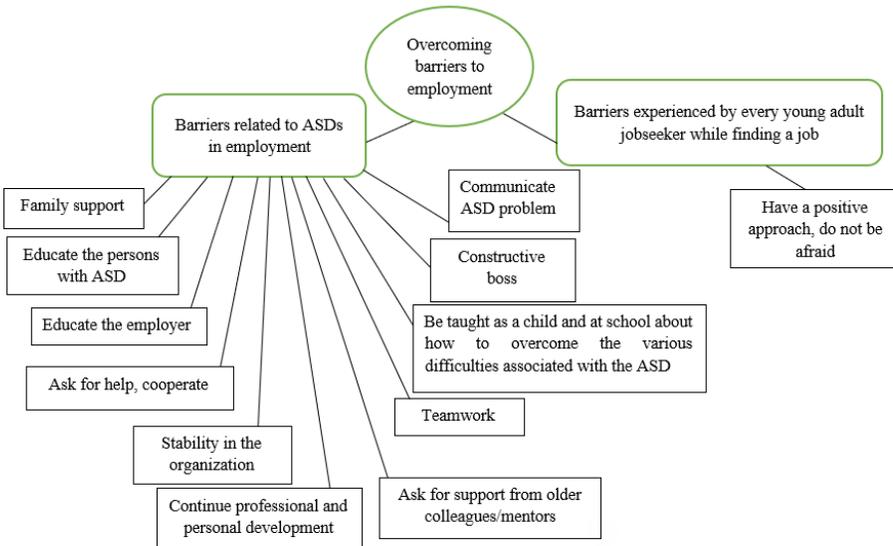
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Figure 1. Barriers to employment

Figure 2. Overcoming barriers to employment

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Discussion

The study contributes to our knowledge of the existing barriers to employment for three young people with HFA and the possibilities of overcoming them in the Latvian context. The results confirm that in all three cases, each young person who had been identified and in Latvias contect diagnosed with HFA in childhood was able to overcome the existing barriers, find a job, and keep it, either in the short term, for example, in the summer period or in project work, or in the long term after the completion of their studies. The results correspond with previous research that found that people with ASDs were more likely to find paid employment if they were
1) older,
2) from a higher-income household, and
3) had higher functional skills (Roux et al., 2013).

Every young adult who enters work life could experience some of the same difficulties, but those with HFA can experience even more. Each person is unique, and each individual with HFA can demonstrate a variety of required characteristics across the diagnostic criteria when searching for a job. At the same time, there can be difficulties related to their neurodiversity.

Our results agree with previous research that people with HFA face some very common difficulties. For example, prefer single-tasking and avoid multitasking (Annabi et al., 2017). As our research revealed, this can both be a barrier during employment but can also become a characteristic that can be very useful to the employer in certain situations. It refers to previously made concuisions by other researchers how important is to find synergies between the skills and strengths of individuals with ASD (Annabi et al., 2017).

People with ASDs prefer straightforward communication, being given clear instructions on what is expected of them. Any unplanned, unexpected changes create anxiety, anxiety can become a real workrelated problem (Parr et al., 2013). Our research agrees that unpredictable situations, uncertainty, and chaos in an organization can cause stress to young adults with HFA. To overcome such barriers, it is important for employers to know about specific HFA-related characteristics and use this knowledge in the best way possible. As was described by Jānis' mother, the employer from the USA who had knowledge and experience working with autistic people communicated in a very straightforward way, which was helpful for Jānis to keep his job. The importance of educating both employers and employees would therefore be a good solution to assist the successful integration of young people with HFA into the workplace.

Based on previous research, we know that parents of autistic children are the most important factor in autistic people finding a job. Holwerda and colleagues (2012) found two factors that facilitated the employment of autistic people: (1) education and (2) family support. Parents are those who provide protection,

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acceptance, and occupational security and prepare their children for collaborating in groups (Krieger et al., 2012). We found in our research, specifically, that mothers were assisting their sons.

We did not find that specific helpful workplace accommodations (Baldwin et al., 2014) were provided for those with HFA in Latvia. But another very important factor was mentioned, which was that young people were taught as children at school and in other services to understand their diagnoses and overcome the various difficulties associated with their ASD.

Conclusions

The task of this small-scale qualitative research was to find out as much as possible about the participants' views of the existing barriers to employment for young people with HFA in the Latvian context. The identified barriers that young people with HFA faced both when looking for a job and when in the working environment were successfully overcome, and they cannot really be considered as barriers or limitations for particular individuals. Every young person entering the labor market faces some of the identified barriers (for example, a lack of experience, a lack of knowledge in the specific field, or a lack of job search skills); however, we found several obstacles that were common to people with HFA. Obstacles both in finding a job and keeping a job that were directly related to the disorder were identified, for example, in the occurrence of sudden changes at work, unpredictability, uncertainty, and multitasking. All three young people, however, confirmed that they were able to adapt and even use these obstacles as advantages and demonstrated their determination and willingness to learn and acquire the lacking skills. The skills acquired in childhood, both in school and outside of school, and their understanding of their disorder have been of great importance to young people with HFA. These have helped them not only to acquire the lacking skills but also to become good learners and continue their professional development. The young people interviewed named many effective ways to overcome difficulties and obstacles both when looking for a job and when they are in the work environment. It is helpful if the organization in which the young person with HFA plans to work has stability, if the boss uses a constructive communication style, and if teamwork is present. Specific characteristics which are common for people with ASDs can even be an advantage in employment; for example, a reluctance to change can promote loyalty. The role of the family and especially mothers' support for young people with HFA during their job search was identified as an important aspect. We found that mothers helped their sons in three ways: (1) by sharing information and forwarding job advertisements and other useful information to them, (2) by providing support in the preparation of motivation letters, CVs, and applications, and (3) by finding them a job in their own workplace.

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Parents' Expectations about Children's Education Targets in the Future Perspective in Latvia

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ABSTRACT

Parents are important educational partners in schools as they are the first educators of their children and play an important role in their children's education, educational targets, and future professions for their children. Parents have their expectations about their children's educational targets but are these expectations connected with targets defined in education documents, and more important – are these expectations aimed at the future perspective of education?

The purpose of the study was to compare the educational targets of parents with educational targets defined in education documents – Latvia education system change project "School 2030" (Skola 2030), Sustainable Development Strategy of Latvia until 2030, and UNESCO new social contract for education for 2050.

The methodology used in this study was an express – survey for parents, in May 2022, with the open question "What do you expect for your child's educational targets?"; literature and source analysis with mapping review strategy, documents detecting the perspective of the education; finding educational target keywords, analysing data, and synthesising categories with data collected in express – survey; data analysis was done using data identifying method by selected keywords. Analysing three educational documents with the future perspective, 7 educational targets as keywords were found and analysed – curricula and skills, cooperation and collaboration, digitalization, inclusion, sustainability, research and innovations, and globalisation. 240 respondents participated in the express survey, detecting the problem of the research, that parents' expectations only partly overlap educational targets defined in education documents.

Analysing survey data, family and parents cannot be considered as educational partners in the educational process as is shown in literature and document analysis. There are two main survey answer tendencies – child-centred education and education based on knowledge and achievements. Parents' behaviour is customer – centred, what is that school can provide for a child's education.

Keywords: collaboration, cooperation, educational partners, educational targets, expectations, parent, parents' expectations

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Introduction

Parents are important educational partners in school systems in Latvia and worldwide. They are the first educators for their children and often play an important role in their children's education. But what about their expectations for their children's educational targets from the perspective of future education? Are these educational targets aimed at the targets of Latvia education system change project "School 2030" (Skola 2030), the Sustainable Development Strategy of Latvia until 2030, and UNESCO new social contract for education for 2050? One simple question in the survey of this research was asked to parents – "What do you expect for your child's educational targets?" and mostly received answers were not about educational targets but the way or process to achieve them. More advanced, happy, and smiling teachers, less work for students, and no cooperation or collaboration for all these educational partners – teachers, students, and parents.

Just 100 years ago, when the national education system in Latvia was developed, attention was paid to democratisation. One of the signs of a democratic school was the teacher or school and the parent or family cooperation. If only the educational targets of school and family training and parenting coincide or are similar, only then children can develop effectively. There can not be a situation where education at home and in school differs and children then should live in separate, even hostile worlds (Jansons, 1924). The development of the new education system and its functioning should be involved by teachers and parents, including family and society. Also, understanding, cooperation, and collaboration in Latvia education system were important from the last centuries till now – school and family should speak in one language and completely understand each other, otherwise, the matter of parenting and teaching at school will be abnormal (Bebru Juris, 1939).

The Universal Declaration on Human Rights (1948) states all three partners in education – teachers, students, and parents or the family, and the educational objectives of this declaration are shared with each partner in education: students have the right to education, parents have the opportunity to choose the type and form of education to be able to fully develop their personality in cooperation with teachers (The Universal Declaration on Human Rights, 1948).

Latvian Children's rights protection law (1998) and Education law (1998) clearly define rights and obligations for children and parents or families. Children's needs include physical, emotional, and social communication, healthcare, education, and development as a state, society, and parents or family responsibility. Children have the right to get an education and they are obliged to study by their physical and mental development (Bērnu tiesību aizsardzības likums [Children rights protection law], 1998). Parents are responsible for obtaining compulsory education for the child, ensuring the necessary conditions for the education, cooperating with an educational institution, with educators and other persons

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involved in the education process, to respect the legal rights and interests of the child (Izglītības likums [Education law], 1998). Teachers should creatively and responsibly participate in the implementation of the relevant educational programs, raise decent, honest, responsible people, develop a responsible attitude of the student towards himself, others, work, culture, and nature, to respect the right of the student and to cooperate with the family of the student in matters of education (Izglītības likums [Education law], 1998).

The target of this research is to compare the educational targets of parents to educational targets defined in education documents, answering the study question- to compare parents' expectations with educational targets defined in education documents. This comparison will show if the educational targets of Latvia student parents are aimed not only at educational standards but mostly – at the future perspective for future education. In this case study, education documents were analysed to discover educational targets, and an express survey was done for parents asking about educational targets for their children. Data were collected, sorted, and analysed by discovered educational targets, and conclusions were made to reveal the expectations of educational targets as they are now (the year 2022), whether they are connected to the education documents and related to the educational targets of the future perspective.

The educational targets from a future perspective

Three documents were analysed to reveal a future perspective on the educational targets in Latvia and worldwide.

From the year 2019 in every school in Latvia, the change in educational approach has started. The basic idea of this change is to enhance the curriculum and educational approach based on 21st-century skills, knowledge, and attitudes. **Project "School 2030"** (Skola 2030) objective is competency, that is an improved curriculum and skilled students who want and can study all their life, create innovations and develop a personality. What is more important – every student should possess the ability to use knowledge, skills, and attitudes in a complex way, addressing problems in changing situations of real life. Teachers must provide students with clear and meaningful results to be achieved, adequate support, and regular feedback during the educational process and encourage students to reflect on their learning and thinking processes. In project materials, it is emphasised that these changes in education are possible if only three educational partners – students, teachers, and parents collaborate. Also, parents' perspective in this educational change process is clear – parents should make a positive attitude toward learning, and engaging every day in their family home life. Parents need to help their children to become more independent and how to overcome trouble and failings. Parents must build constructive relationships with the school and teachers, as it is the best way to support students (Skola 2030, 2019). (Skola 2030, 2019).

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The main idea of **the Sustainable Development Strategy of Latvia until 2030** is to value the necessities of the current generation for the future evolution in economics, the well-being of society, and preserving the environment. (Sustainable Development Strategy of Latvia until 2030, 2010). This strategy was developed by analysing global processes such as demographic changes, innovations and globalisation of economic processes, skills and competences requested from the labour market, urbanisation and the climate changes. This strategy indicates a changing education paradigm in assessing qualitative and long-life education. The educational objective of this strategy is to create one of the best education systems in Europe. One of the priorities is long-term action directions to change the organisation of educational processes and the way of access to education. E-school, and the use of information technologies provide the best solutions to every priority. Regarding educational partners' and parents' expectations about children's educational targets, it is mentioned that parents should be involved in the study process, and teachers and schools should form a close and constant collaboration with parents, using different methods (Sustainable Development Strategy of Latvia until 2030, 2010).

UNESCO document **Reimagining our futures together: a new social contract for education**, the report from the international commission on the futures of education. This contract reveals the future of education worldwide, showing the main criteria for future education up to the year 2050. The main topics discussed in this contract are moving towards more equitable educational futures, disruptions and emerging transformations, pedagogies of cooperation and solidarity, curricula, transformative work of the teachers, transforming schools, research and innovations, global solidarity, and international cooperation. This contract leaves the main question open – building futures of education together with proposals of building a new social contract, calls to action, dialogue and participation, and an invitation to continue.

This contract specifies that education is the key pathway and there is a necessity to transform education. "Education must build skills needed in 21st-century workplaces, taking into account the changing nature of work and the different ways that economic security can be provisioned (UNESCO Reimagining our futures together: a new social contract for education, 2022). Contract reveals educational targets for every educational partner all over the world, it demonstrates not only the curricula of the future education but more – it demonstrates the main keywords.

Analysing three education documents with the future perspective, 7 educational targets as keywords were found (see Figure 1) and analysed as it is described in the materials of documents. These educational targets are curricula and skills, cooperation and collaboration, digitalization, inclusion, sustainability, research and innovations, and globalisation. Some explanations are similar, some

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of them need more explanation or they are described from different perspectives. Three educational partners are described in every document, outlining the importance of collaboration for a successful educational process.
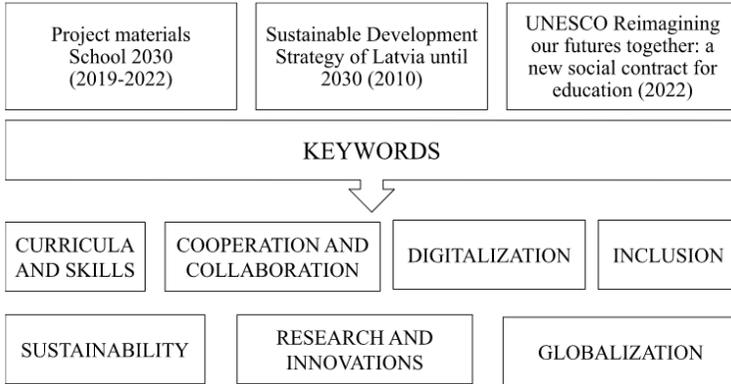

Figure 1. Defined educational targets

Table 1. Educational targets and their explanations in the future perspective of education

Educational target	UNESCO Reimagining our futures together: a new social contract for education	Latvian educational project "School 2030" (Skola 2030)	Sustainable Development Strategy of Latvia until 2030
Curricula and skills	The acquisition of knowledge; creation of new knowledge, and education across time and space	New approach and curricula of education, based on 21st-century skills, knowledge and attitude	Quality and accessibility of education, creative thinking in the learning process
Cooperation and collaboration	Together, teachers, students, and parents need to form a community of knowledge – seekers and builders, problem-oriented collaborative learning	Cooperation and collaboration of schools and families to encourage and stabilise learning experiences for students to become more competent	Close cooperation and collaboration from teachers and schools to parents to promote educational process
Digitalization	Digitalization of education and the possible emergence of new hybrid or virtual-only models of schooling	Digital skills help students to use digital technologies efficiently, intelligently, and responsibly	Digitalization of schools and libraries to ensure access to a modern study process and information

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Table 1. Continued

Educational target	UNESCO Reimagining our futures together: a new social contract for education	Latvian educational project "School 2030" (Skola 2030)	Sustainable Development Strategy of Latvia until 2030
Inclusion	The right to inclusion is based on each person's diverse	Inclusive education – recognition and evaluation of different learning needs of students	Integration of people in the society via the educational system as the result of systematically implemented state policy
Sustainability	Education and care across the lifespan	The sustainability of society and the environment are linked to the daily behaviour of the individual, locally and globally	—
Research and innovations	Research and innovation must strengthen capacities for foresight and future literacy, research from within education, mobilising the learning sciences	Creativity is the process of creating new ideas that are useful for a person or group of people	Innovation economics continuously demands new skills and competences
Globalisation	Deterritorialization from social, political, and economical relationship	The understanding about changes in Latvia and the world necessary for the future development for the skills and knowledge	The globalisation of the economy and promotion of creative activity

After analysing data summarised in Table 1, educational targets definitions as it is understood in this research are summarised in Table 2 as some definitions are slightly different and do not reveal the definition by its meaning.

Table 2. Research definitions of educational targets

Educational target	Explanation
Curricula and skills	An adapted course for academic studies acquired with training to be able to produce solutions for problems. The combination of instructional practices, learning experiences, and student performance assessment is designed to bring out and evaluate the target learning outcomes of a particular course (Wilson, et al., 2021; William, et al., 2020). The subject matter that is to be learned (Kirchhoff, Keller, 2021).

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Table 2. Continued

Educational target	Explanation
Cooperation and collaboration	The practice of cooperating, where all three educational partners cooperate and collaborate, joint operation or action, the act of working jointly. Individuals working together to accomplish goals (Goulet, et al., 2003; Fadel et al., 2015; Spencer, 2020 A; Spencer 2020 B).
Digitalization	The use of digital technologies to change an educational model and provide new revenue and value-producing opportunities (Schmidt, Tang, 2020).
Inclusion	A mode of teaching that intentionally designs course content and curricula to engage with students of diverse backgrounds, abilities, and lived experiences, the practice of educating children in the general education classroom, including children with physical, mental, and developmental disabilities (Dale McManis, 2016; UNESCO, 2016).
Sustainability	The property of being sustainable, the use of methods that do not cause long-term harm to the environment or deplete natural resources, in education – the content, learning methods, and outcomes that help students develop a knowledge base about the environment, the economy, and society (UNESCO, 2022)
Research and innovations	The quest for new knowledge and studies to determine the problem or the fact, finding new solutions and development of education. The result of experiments and research is the creation of something in the mind (OECD, 2019).
Globalisation	Growth, inside and awareness on a global or worldwide scale, Worldwide flow and integration of culture, media, and technology due to advances in communication systems and economic interests (Bakhtiari, 2011).

Some definitions of educational targets in Latvia education documents must be assessed and evaluated for 21st-century skills and economical and political development in the educational system. Definitions of curriculum and skills, cooperation, and collaboration cover several more definitions as it is described in the result section of this research.

Parents' partnership in education

As it was analysed in education documents – the future perspective demonstrates the importance of parents or family engagement for a successful educational process. Over the last two decades, the emphasis has shifted to the establishment of meaningful collaborative relationships that engage families, schools, and communities (Christenson, Reschly, 2012).

Education includes different partnerships, the most fundamental and most widely researched of them is the teacher-student partnership, but also other partnerships are important at different levels of the education system.

There is a discussion about the term used in the latest research – parent, parents, or family – who is the person or people responsible for a child's successful

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educational process. The term "family" is often chosen over "parent" as the first term refers to caretakers who are important contributors to a child's life. "The term "family" is used here as inclusive of members who may or may not live together but who share a common history, a significant bond, and who play an important role in a child's development and uprising" (Mitchell et al., 2021). The terms family/ies and parent/s are used to represent any adult caretakers who have responsibility for the well-being of a child or children, for example, biological parents, foster care providers, grandparents, aunts and uncles, siblings (Mapp, Kuttner, 2013).

There are several theories describing parent's partnership for the educational process – Bronfenbrenner's Ecological Systems Theory (1975, 1977, 1979, 1986, 1994, 2001, 2006), Epstein Model for Parental Involvement (1995, 2001, 2002, 2010, 2011), Hoover-Dempsey and Sandler Model for Parental Involvement (1995, 2001, 2002, 2005), Christenson and Sheridan Families and Schools Partnership (2001, 2004, 2010), Garbacz et al Parent Education Involvement (2017). All these theories describe the importance of parent involvement in a child's successful, normal, and enforceable educational process, showing interwoven spheres of influence (Reynolds, Miller, 2013). Theories joined together to create the new term "Family-School-Community Parenting (FSCP) as a multi-dimensional process in which schools, families, and communities work together to ensure a child's social, emotional, and academic success" (Miller et al., 2022).

As parents are important not only for children and their well-being but as significant participants in educational partnerships, strong relationships, welcoming environments, multidirectional communication, and mutual under-standing are the key to educational partnership, depending on every educational partner and their educational objectives. Multidirectional communication – deep listening, facilitative approaches during meetings, handling conflicts, and positive, predictable, and proactive communication leads to meaningful collaboration (Lerner, 2005). Mutual understanding for each educational partner by developing targeted skills as a shared responsibility to promote student development, shared or joint work involved by all parties, the importance of interactions is collaborative and intervention efforts are targeted across home and school and communication allows for a multidirectional flow of information from either party (Miller, et al., 2022). Productive parents' relationship with teachers or school is powerful with collaboration, trust (benevolence, honesty, openness, reliability, competence), problem-solving process, and resolving leadership problems through productive dialogue (Cardno, 2012).

As there are several educational partners, there are different ways for the partnership. Schools or teachers as leaders in this partnership must make connections with families, communicate intentionally to build relationships, and collaborate with families (Chavkin, 2017). Collaboration is one of the cornerstones in this

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relationship that is family-centred practice when school, teachers, parents, and families work as equal partners to support the learning and development process of the child (Gonzalez-Mena, 2011).

Parents are important educational partners and their expectations about their children's educational targets are meaningful. Effective and qualitative cooperation and collaboration of all educational partners leads not only to the achievement of educational targets but also academic accomplishments and ensures children's well-being starting from childhood and lifelong.

Methodology

This case study discovers the educational targets in the future perspective as a partnership tool for educational partners – teachers, parents, and students' application of a theory to real education situations in the Latvia education system. As it is described in the result section of this research, characteristic behaviour of parents' expectations about their children's education targets was discovered. Also, cross – case research was done to discover multiple sources.

Table 3. Methods used for the research

Method	Details	Results
Express -survey for parents (McDonald, Rosier, 2011) as data acquisition method	Latvia, May 2022, online survey distributed on social networks; 1 opened question "What do you expect for your child's educational targets?"; Selection questions – gender of the child and parent	240 respondents, a wide spectrum of answers that are ranged in Table 5 with educational targets defined in Table 1 and Table 2
Literature and source analysis with mapping review strategy (Petticrew, Roberts, 2006) as data analysis methods	3 different documents demonstrate the future perspective of the education, theoretical literature, and source; Data analysis and synthesis performed by narrative type of synthesis	54 units of documents, literature, and sources were analysed for this research, shown in the reference section of this article Three consecutive steps were analysed: 1. finding categories as keywords 2. analysing data from defined categories 3. synthesised categories with data collected from express – survey
Express – survey data analysis as data processing method using data identifying method by selected keywords (Tran et al., 2017)	Data analysis was done by 7 identified keywords defined by mapping review strategy; univariate analysis method was used to analyse single variable	Analysed data is summarised in Table 5; the coding of this analysed data was done by dividing data by defined keywords, adding one new keyword that could not be identified as defined categories

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In this study there have been observed all ethical norms. Informed consent was received from the survey participants, the respondents were informed about the nature, purpose and progress of the study, the anonymity of the respondents is guaranteed. The results of the survey were analyzed and will be used in an aggregated way and published.

Several methods were used to achieve the results of this research (see Table 3).

Results

Document, literature, and source analysis reveal the roles, partnerships, and importance of every educational partner now and in the future perspective. An open question for parents "What do you expect for your child's educational targets?" uncovered different problems in Latvia's educational system during the time of the COVID-19 pandemic starting from 2019. The school year 2021/2022 was the year when schools were mostly open and after a year and a half of children could go to school and not study at home. Parents' answers also show that they are tired of the educational process as the school year is almost over. They are tired of teaching children by "themselves" at home when the educational process was managed remotely.

240 respondents participated in the express survey, 87% of respondents were women, 13% were men, and the gender of the children was 45% girls, and 55% boys. Educational levels – primary school (class 1–3) 46%, elementary school – 51% and secondary school – 3% (see Table 4).

Table 4. Survey respondent analysis

	Primary school	Elementary school	Secondary school	Total
Respondents	107	122	11	240
Parent – woman	92	107	10	209
Parent – man	13	17	1	31

After analysis of defined educational targets, parents' expectations about their children's educational targets reveal the education system in Latvia in 2022 – 54% of parent's expectations relate to educational target curricula and skills, and there is no significant difference between the gender of the children about this educational target (see Table 5).

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Table 5. Survey analysis by defined educational targets

Educational target	Primary school		Elementary school		Secondary school		Total	
	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy
Curricula and skills	22	32	32	32	5	3	62	67
Cooperation and collaboration	3	5	2	1	1	–	6	6
Digitalization	–	–	–	–	–	–	–	–
Inclusion	1	4	–	–	–	–	1	4
Sustainability	2	–	1	–	–	–	3	–
Research and innovations	–	1	2	–	–	1	2	2
Globalisation	3	2	2	2	–	–	5	4
Others	12	20	18	27	2	–	31	47

The next biggest group is not connected with educational targets defined in this study, named – others. These educational target expectations are not related to defined educational targets and mostly relate to the teacher's profession and teaching skills. As it is defined in education documents, it can be defined as the transformative work of teachers – recasting teaching as a collaborative profession, envisioning and enchanting curriculum and pedagogy, educational research, teacher education, and professional development (UNESCO Reimagining our futures together: a new social contract for education, 2022), teacher professional self – sufficiency – aware of decisions on their practices, observations and in reflexie, the possibility of planning training in cooperation with colleagues, (Project "School 2030), 2019) teachers as leaders not only to teach and help students, but to inspire, help, organise, cooperate and collaborate (Sustainable Development Strategy of Latvia until 2030, 2010). This group cannot be imposed as one of the educational targets for children, this is more parents' expectations outside the provisions of effective educational partners' cooperation and collaboration.

Other educational targets such as cooperation and collaboration, inclusion, sustainability, research and innovations, and globalisation make a small number of parents' expectations. This situation can be explained by the idea that school is education, combined with knowledge and skills and all other educational targets concede in front of the most important expectations about educational targets. Also, society in general is not well educated about these processes as express survey analysis reveals this significant difference between educational target expectations (see Figure 2).
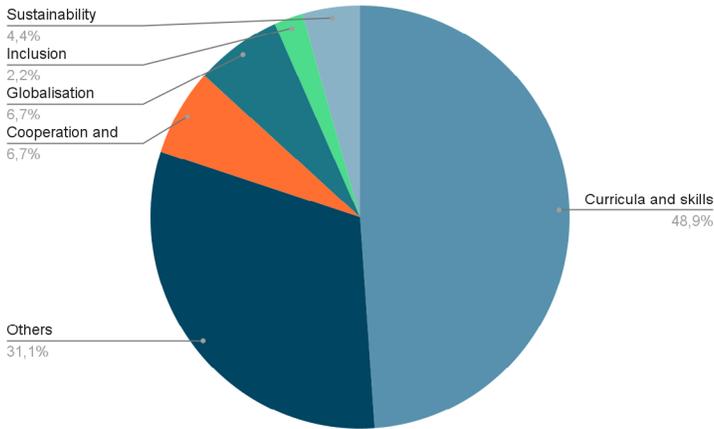
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Figure 2. Parents' expectations and defined educational targets

Digitalization is an educational target from defined keywords that is not mentioned as parents' expectations. This is an interesting discovery because of the importance of digitalization in the educational process and society. There is a problem of term insight in Latvia society – digitalization and children using devices. One of the explanations is that more than 70% of children spend more than 3 hours on devices every day and 96% of parents need to set limits on their child's digital habits (Kaspersky, 2021) and there is a discussion about useful techniques used in the educational process, not free time spent by children. Also, COVID-19 pandemics remote or partly – remote educational process for almost 2 years influenced the use of technologies and parents are not satisfied with the long hours children are spending in front of the screen (OECD, 2021).

The answer to the study question – what are parents' expectations about educational targets that are defined in education documents is that parents expect their children to have knowledge and skills for the 21st century and parents know how to transfer teachers' work to achieve this goal. Significant indications about other educational targets, especially digitalization, reveal that parents as educational partners are focused on the result of the educational process and academic results more than society, economic and political development in Latvia and worldwide and their children's ability to live in this future world, to study, get a profession and work.

Conclusions

Analysing survey data, family and parents cannot be considered as educational partners in the educational process as is shown in literature and document analysis. Parents see their role in the educational process as counsellors, and

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examiners, not educational partners, but still – their expectations are important as the theories of the effective educational process reveal partnership importance.

There is no significant difference between educational targets divided by the gender of the child, so parents' expectations are similar whether the child is a boy or a girl.

Parents' answers about their expectations about their child's educational objectives are more about the educational process – how to manage it and less about what is the educational objective.

There are two main survey answer tendencies – child-centred education and education based on knowledge and achievements. Both these tendencies are without child engagement.

Parents' behaviour is customer-centred, discovering the problem – that is what can school provide for a child's education?

As one of the skills for qualitative future education is self-guided education, parents' opinions are against it – their child must not learn by himself, but the school must provide knowledge. Flipped learning and flipped classroom technique as a methodology are criticised by parents, especially for secondary school students.

Only 13% of respondents were men. This situation shows the problem of parents' partnership, where one parent is responsible for communication and collaboration with the school, and expectations for educational targets are mostly personal, in this case, the study – women are the parents managing educational partnership in the school.

As the biggest part of respondents were for children in primary and elementary schools (class 1–9), the older a child gets, the fewer parents are involved in the child's education process. The most criticised educational process, especially teachers' work revealed by primary school parents, is explained by the fact that after 9th class children can continue studies in other schools and the competition for best gymnasium and schools is significant. Numerous respondents expect their children to study in the top-rated gymnasium in Latvia.

The next development of this study is how parents range the defined educational targets if they must choose one of the defined targets.

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