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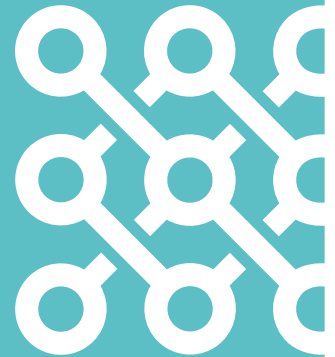
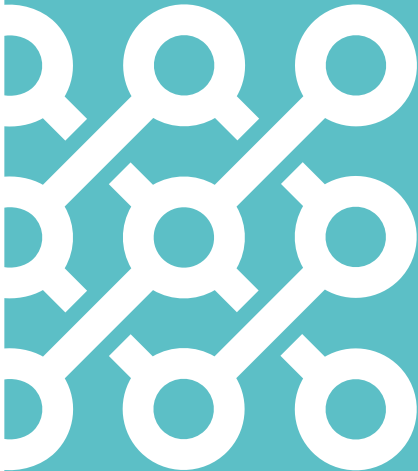
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PREFACE

The 83rd International Scientific Conference of the University of Latvia brings together scholars and practitioners from a wide range of disciplines, reflecting the University's long-standing tradition of promoting interdisciplinary dialogue and research excellence. The conference is organized in 13 sections, each devoted to a distinct field of inquiry, providing a comprehensive platform for the exchange of innovative ideas and practices.

This volume presents the proceedings of the section “Human, Technologies and Innovations”, which unites research from the fields of education sciences, psychology, and arts. It comprises 52 papers authored by 120 researchers from eight countries, showcasing the diversity of perspectives and approaches that characterize contemporary scholarship in these domains. The contributions highlight not only theoretical advancements but also the practical and ethical challenges posed by technological and social transformations in education and human development.

The proceedings of this conference bring together a diverse and inspiring collection of studies that collectively highlight the dynamic intersections between education, technology, well-being, and human development. The research presented here reflects not only academic rigor but also a shared commitment to addressing societal challenges through innovative educational practices and interdisciplinary collaboration.

A recurring theme across the papers is the transformative role of digitalization and artificial intelligence (AI) in education. Several studies explore the integration of AI tools, such as ChatGPT, into medical and teacher education, revealing their potential to personalize learning, enhance accessibility, and develop critical thinking skills. Yet, they also point to emerging risks: misinformation, ethical dilemmas, and academic dishonesty, that require careful regulation and educator training. A complementary policy analysis of OECD documents exposes uneven representations of AI competencies, with ethics being prioritized over practical application and collaboration. Together, these works underscore a crucial message: digital transformation in education must be guided by clear, equitable, and ethically grounded policies.

Closely related are studies examining teachers' and learners' adaptation to digital environments. Investigations into online and task-based language teaching emphasize intercultural competence, empathy, and emotional intelligence as critical factors for success in post-pandemic online classrooms. Likewise, research on digital tools for

preventive classroom discipline offers practical insights into how technologies such as ClassDojo or Google Classroom can foster motivation, attention, and positive behavior, illustrating how pedagogy and technology can be meaningfully intertwined.

The proceedings also reflect growing interest in inclusive and value-based education. Several contributions address preschool and primary teachers' professional development needs in implementing inclusive practices, revealing significant gaps in teacher preparation and institutional support. Complementary research from Lithuania and Latvia stresses the importance of differentiated instruction, effective mentoring, and collaboration among educators and families. These findings highlight inclusion not merely as a pedagogical goal, but as an evolving social value that demands systemic policy attention and professional empowerment.

In the same spirit, the theme of teacher well-being and professional identity emerges prominently. Studies on mindfulness interventions show measurable benefits for teachers' emotional resilience, stress management, and classroom relationships. Another study on communication with students exhibiting behavioral difficulties demonstrates how reflective practice and emotional competence contribute to more inclusive classroom cultures. Collectively, these works remind us that sustainable education begins with teachers who are supported, mindful, and professionally confident.

Beyond the classroom, the proceedings showcase a remarkable variety of innovative research methodologies and domains. In the field of physical education and sports science, several contributions employ experimental and biomechanical analyses, ranging from studies of optimal driving posture and swimming efficiency to analyses of football players' tactical performance. These studies combine rigorous data collection with applied insights that extend far beyond academia, influencing road safety, health promotion, and sports training practices.

Another cluster of studies situates education within broader historical, linguistic, and cultural frameworks. Historical analyses of adult and distance education in Latvia trace how societal transformations have shaped access to learning, while research on translation education in Lithuania demonstrates how generative AI tools are reshaping professional training in the humanities. Similarly, studies of multiculturalism, civic engagement, and value education in Latvia offer conceptual clarity to terms often used ambiguously in public discourse, emphasizing the importance of critical reflection and social responsibility in higher education.

Several contributions stand out for their innovative research approaches. Mixed-methods studies combining surveys, focus groups, and statistical modelling reveal nuanced insights into teacher competences, learner motivation, and curriculum design. Experimental designs and systematic literature reviews bring empirical depth to questions of physical literacy, motor development, and educational technology. Meanwhile, the use of GIS-based spatial analysis in sports infrastructure research and the systematic mapping of ethical bias in generative image models demonstrate how educational research is expanding its methodological toolkit to address new social realities.

Equally important are the findings with direct societal relevance. Studies on linguistic well-being in minority education highlight the urgent need for policy and community collaboration to ensure equitable language learning opportunities. Research on volunteering among preschool teacher trainees in Lithuania and civic engagement definitions in higher education emphasize education's civic mission – to cultivate empathy, responsibility, and participation. Investigations into parents' understanding of physical activity in preschool children, as well as teachers' appreciation of nature as an educational value, remind us of the humanistic and ecological dimensions of education, central to sustainable development.

Finally, the proceedings include forward-looking reflections on the future of pedagogy and learning design. From integrating literature into EFL curricula to applying project-based and design thinking approaches in teacher education, these studies suggest that creativity, interdisciplinarity, and collaboration will define the next era of educational innovation. The conference thus serves as both a mirror of current academic inquiry and a catalyst for future exploration, where education continues to evolve alongside society, technology, and the human spirit.

Together, the works collected in this volume demonstrate that education remains a powerful instrument for social transformation grounded in research, inspired by values, and driven by innovation. The editor express their sincere appreciation to all authors and reviewers whose dedication and intellectual contributions have made this collection a meaningful reflection of contemporary educational thought and practice.

Prof. Linda Daniela

TASK-BASED NEEDS ANALYSIS OF TEACHERS' PROFESSIONAL COMPETENCES IN ONLINE LANGUAGE TEACHING

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ABSTRACT

Post-pandemic transformations have accelerated the integration of digital technologies into education, resulting in both an increase in the number of students and greater diversity within socio-emotional classrooms, particularly in the context of English as a Second Language acquisition. In this context, teachers face the challenge of adapting task-based language teaching methodologies to diverse needs. This paper investigates learners' perspectives on teachers' professionalism in online environments through a task-based needs analysis. A mixed-method approach was applied: quantitative data were collected through a questionnaire, and qualitative insights were gathered from focus groups. Results revealed three key competences valued by learners: clear communication, flexible scheduling, and empathy. These qualities demonstrated strong correlations, underscoring their combined role in effective online teaching. Findings highlight the importance of continuous professional development that addresses both digital competences and psychological resilience. The study contributes a methodological framework for supporting teacher training and curriculum design in socio-emotional, digitalized classrooms.

Keywords: *online language teaching, task-based needs analysis, focus group discussion, learners' perspectives, teachers' professional competences*

Introduction

Online education has long been a central focus for researchers across multiple disciplines, particularly in terms of its sociocultural dimensions and its impact on both educators and learners. Moore (1993) introduced the concept of transactional distance, describing the psychological and communicative gap between instructors and students in online learning, which is influenced by the level of interaction. Effective online learning, therefore, depends on the quality of relationships among participants, enabling meaningful communication and information exchange. Optimal online interaction balances teacher and student roles across five types of interaction: student-teacher,

student–student, student–content, student–interface, and student–environment. Studies suggest that positive attitudes toward the learning experience are critical for effective communication in digital contexts (Yilmaz & Karaoglan Yilmaz, 2019; Çağiltay et al., 2001; Yilmaz & Keser, 2017).

In recent years, online education has become increasingly prevalent, particularly for English as a Second Language (hereinafter – ESL) instruction, allowing learners from diverse cultural backgrounds to engage with language learning flexibly and accessibly. Moore (1993) emphasizes that self-autonomy and self-regulation are central to effective distance education. Task-based and individualized approaches, supported by digitally categorized content, enable learners to achieve personalized learning goals. Successful online language acquisition relies on flexible time management, regular progress monitoring, and structured opportunities for engagement with instructors, peers, and learning materials. Recent studies confirm these principles: Tunjera (2023) showed that WhatsApp groups can enhance peer interaction and reduce transactional distance, while Abuhasna and Alnawajha (2023) highlighted the importance of integrating diverse theoretical frameworks to address gaps in transactional distance theory.

Teaching in socio-emotional, multilingual online classrooms requires educators to adapt their methods to meet learners’ linguistic, cultural, and cognitive needs. Teacher professionalism, cultural sensitivity, and pedagogical competence are therefore critical for effective ESL instruction. Salmon’s (2000) five-stage e-moderating model provides a structured framework to promote student engagement and interaction in online learning. The first stage, *access and motivation*, focuses on preparing and motivating learners by ensuring they understand the learning objectives and the technological tools through which interaction will occur. The second stage, *online socialization*, emphasizes the importance of peer interaction, collaboration, and adaptation, fostering a supportive digital community. In the third stage, *information exchange*, learners actively participate in discussions, complete assignments, and share knowledge, consolidating foundational understanding. The fourth stage, *knowledge construction*, involves learners in deeper cognitive processes through projects, reflective activities, and complex tasks that promote the integration of concepts. Finally, the fifth stage, *development*, enables learners to apply and process knowledge in practical contexts, engage in higher-level interaction, and assume teaching roles within the online environment, thereby reinforcing both mastery and autonomy. Salmon positions educators as e-moderators, guiding learners, sustaining engagement, and structuring meaningful online interactions.

Subsequent research has expanded on these principles: Martin, Sun, and Westine (2020) reviewed effective strategies for engagement and course design; Dhawan (2020) emphasized task design for effective online learning; Koran and Sarnou (2024) demonstrated how e-tivities can enhance intercultural communication skills; and Morong and DesBiens (2017) provided guidelines for culturally responsive online learning.

The task-based language teaching (hereinafter – TBLT) approach has been widely studied for its effectiveness in fostering communicative competence. Nunan (1989, 2004a, 2004b) emphasized the design of authentic, real-world tasks that enable learners to

achieve meaningful communicative outcomes. Ellis (2003a, 2003b) highlighted tasks' role in interaction and negotiation of meaning, while Willis and Willis (2007) underscored skill integration and learner autonomy. Skehan (1998) examined cognitive demands, and more recent studies (Ellis, 2021a, 2021b; García Botero & Guimón, 2022; Li & Zhang, 2023; Kim & Lee, 2020) have explored digital, multimodal, and hybrid applications of TBLT. A central insight is that tasks should focus on meaningful communication, while attention to linguistic form remains embedded within authentic problem-solving (Ellis, 2021a, 2021b; Long, 2015a, 2015b; Doughty & Williams, 2020).

Building on these theoretical and empirical foundations, this study applies task-based principles to online English language learning, aiming to conduct a needs analysis through a survey of adult learners. The goal is to identify learners' perceptions of the professional qualities and competencies of online language teachers and to explore challenges and opportunities for enhancing curriculum design in digital learning environments. The research addresses the following questions:

1. What characteristics do learners consider essential for an ideal digital teacher, based on task-related needs?
2. What is the optimal availability of an online teacher to support task-based learning?
3. How do learners evaluate the importance of teacher feedback and guidance in facilitating task completion?

To answer these questions, the study draws on Moore (1993), Salmon (2000), Nunan (2004a, 2004b), Ellis (2003a, 2003b), Skehan (1998), and Long (2015a, 2015b, 2000), reinterpreting their concepts within post-pandemic online learning environments. Previous studies (Moore, 1993; Salmon, 2000; Ellis, 2021) highlight the importance of transactional distance, structured interaction, and authentic tasks. These frameworks form the basis for the present task-based needs analysis in online ESL contexts. The survey data form the basis for the second stage of research: task-based needs questionnaire analysis.

The Significance and Relevance of the Study

This study addresses challenges arising from the digital transformation of education post-COVID-19, focusing on socio-emotional online ESL classrooms where educators must adapt task-based language teaching (TBLT) strategies to diverse linguistic needs.

It synthesizes key theoretical frameworks to advance teacher professionalism and intercultural competence. Moore's (1993) Transactional Distance theory emphasizes structured dialogue and learner autonomy to reduce psychological and communicative barriers in online learning. Salmon's (2000) e-moderating framework offers a phased approach for creating inclusive, culturally responsive digital environments. Within TBLT, Nunan (1989, 2004a, 2004b) highlights authentic, real-world tasks that integrate multiple language skills, while Ellis (2003a, 2003b, 2009, 2017a, 2017b, 2021a, 2021b) emphasizes the balance between communicative practice and explicit attention to form, ensuring sensitivity to cultural diversity. Recent research on student engagement in digital learning (Karaoglan-Yilmaz et al., 2022) further supports the importance of these approaches.

Building on these foundations, the study proposes a professional development framework to enhance teachers' socio-emotional competences and digital literacy. It offers practical guidance for designing task-based instructional strategies that increase learner engagement and improve outcomes. This study aims (a) to examine the impact of TBLT on post-COVID-19 online learning environments and (b) to evaluate learners' awareness and perspectives on task-based online English language teaching. Overall, the research bridges theory and practice, providing actionable recommendations for teacher training and curriculum design in socio-emotional, digitally mediated classrooms.

Methodology and Research Design

This study employs an explanatory sequential mixed methods design, using qualitative data to explain and enrich the findings of the quantitative phase (Schoonenboom & Johnson, 2017). The research was conducted in two stages.

In the first stage, a needs analysis questionnaire assessed learners' expectations regarding the professional competencies of online language teachers. Quantitative results were then analyzed to identify patterns and priority areas for instruction.

In the second stage, these findings were discussed in a focus group, allowing learners to reflect on and elaborate their perspectives. Qualitative insights from the discussion were integrated with the questionnaire results and relevant literature to provide a comprehensive interpretation of learners' needs.

Research methodology phases

The study began with the administration of the task-based needs analysis questionnaire. Responses were analyzed to highlight key competencies and instructional priorities. Building on these results, a focus group discussion facilitated deeper exploration of learners' experiences and expectations. Finally, the quantitative and qualitative data were combined to form a holistic understanding of the professional competences most valued in online language teaching.

Applying task-based approach to needs analysis

The task-based approach to needs analysis examined learners' requirements in relation to real-world tasks expected in academic or professional contexts (Ellis, 2017a, 2017b; Long, 2015a, 2015b). Relevant tasks were identified through analysis of authentic communicative situations, such as participating in negotiations, writing formal reports, or engaging in collaborative discussions, prioritizing practical, goal-directed language use over abstract content (East, 2021a, 2021b).

Data were collected using questionnaires, interviews, and focus group discussions, with learners reflecting on real-life situations where they faced linguistic or communicative challenges. Task simulations were also implemented to clarify which competencies required reinforcement. This triangulation of methods enhanced validity and reliability (Ellis, 2018).

The analysis focused on task-specific skills and strategies rather than generalized language proficiency, considering linguistic, interpersonal, and technical competencies needed for successful performance, for example, effective collaboration in virtual meetings (Long, 2015a, 2015b).

Findings directly informed curriculum development, guiding the design of targeted training modules. For instance, if report writing was identified as a challenge, instructional activities included realistic simulations like drafting formal documents or composing business correspondence, aligning with task-based curriculum design principles (East, 2021a, 2021b).

Finally, learners' progress was assessed through structured evaluations of authentic task performance. Feedback from these assessments was used to refine instruction, creating a cyclical and reflective process that ensures teaching remains responsive to evolving learner needs and relevant to real communicative demands (Ellis, 2017a, 2017b; East, 2021a, 2021b).

Needs analysis questionnaire

A structured needs analysis questionnaire was developed to capture learners' task-related needs, integrating both general and task-specific elements. Data were collected via Google Forms, allowing efficient distribution and systematic analysis.

The first part elicited learners' perceptions of teacher competencies and pedagogical priorities, asking which skills are most essential for English language teachers, which aspects of language learning need greater emphasis, and what challenges learners face (Brown, 1995; Richards, 2001). The second part gathered feedback on classroom experiences, instructional preferences, and perceived barriers, including preferred teaching methods (interactive activities, lectures, collaborative tasks) and types of instructor support (Ellis, 2017a, 2017b).

Analysis identified recurring themes and priority areas. For instance, frequent difficulties in oral communication or listening comprehension indicated a need to enhance teacher competencies and incorporate more communicative strategies (Nunan, 2004a, 2004b). Task-based language teaching principles were integrated by including items on learners' confidence and needs in performing real-world tasks, such as participating in group discussions, writing professional emails, or delivering presentations (Willis & Willis, 2007; Ellis, 2003a, 2003b).

Grounding the needs analysis in authentic task performance provided actionable data to design a learner-centered, task-aligned curriculum and informed teacher training to better support learners' academic and professional goals.

Research Procedure

Quantitative data were collected via Google Forms using an online questionnaire developed within the European Social Fund Plus (ESF+) Project No. 4.2.4.2/1/24/I/001, "Support for Adult Education Based on Individual Needs" in Latvia. The task-based needs analysis assessed learners' needs and explored professional competences for effective online English language teaching.

The questionnaire, developed and piloted between July and September 2024, included 27 statements addressing three competence areas: the concept of the “ideal digital teacher,” availability and flexibility, and empathy and understanding, based on the Latvian Teaching Profession Standards (2020) and Guidelines for On-site, Blended, and Remote Learning (2021). Four items were selected for detailed analysis.

A total of 200 participants from Latvia (65% women, 35% men; mean age = 37) with diverse academic backgrounds were recruited via purposive sampling to ensure demographic and professional representation. The survey was available from January 2 to January 31, 2025. Data were analyzed in Microsoft Excel using descriptive statistics (mean, median, standard deviation, skewness, kurtosis) and reliability analysis via Cronbach’s alpha, which indicated acceptable to good internal consistency: clear communication ($\alpha = .82$), flexible scheduling ($\alpha = .76$), and empathy and understanding ($\alpha = .79$). Ninety-five percent confidence intervals were computed; for example, empathy and understanding had a mean of 4.73 (95% CI [4.50, 4.96]), indicating a narrow range despite the sample size.

Participants rated the key variables of effective educators as follows: clear communication (mean = 4.46), flexible scheduling (mean = 4.46), and empathy and understanding (mean = 4.73). Ethical standards, including GDPR compliance, were strictly observed. These results provide preliminary insights, and further research with a larger, more diverse sample is recommended to enhance generalizability.

Focus group participant discussion

A focus group discussion was conducted between October 20 and November 20, 2024, to explore perspectives on developing educator competences for future teachers. The group included a practicing teacher and adult learners from a digital classroom, referred to as Teacher (T) and Participant (P) to maintain confidentiality.

Participants were selected via convenience sampling from English language improvement courses within the “*Support for Adult Education Based on Individual Needs*” project in Latvia. This ensured a diverse sample of individuals actively engaged in enhancing their English proficiency. The discussion was moderated by the author, fostering an open environment for exchanging ideas.

At the outset, participants received a concise definition of teacher competence and were presented with results from the task-based needs analysis questionnaire. This grounded the discussion in empirical data, enabling participants to draw on their professional experience, learning history, and observations to provide nuanced perspectives on educator competences within teacher education programs.

The 90-minute online session, conducted in English, was transcribed, summarized, and analyzed using thematic analysis following Braun and Clarke’s (2006) six-phase approach. This method identified recurring patterns and divergent viewpoints, allowing comprehensive interpretation of participant perspectives. Ethical standards were rigorously observed, with full adherence to GDPR throughout the process.

Results

This chapter presents the findings of the study, focusing on learners' perceptions of the essential qualities of an ideal online language teacher. The analysis is based on data collected through a task-based needs analysis questionnaire and subsequent focus group discussions. Descriptive statistics, including mean (*M*), median (*Mdn*), standard deviation (*SD*), skewness (*Skew*), and kurtosis (*Kurt*), were employed to identify prevailing trends, while correlations between study variables were examined to explore relationships among learners' preferences.

The internal consistency of the measured variables was evaluated using Cronbach's alpha, and Pearson correlation matrices were applied to investigate the relationships among key teacher qualities. The results are structured according to the research questions, emphasizing the most valued characteristics, teacher availability, and the role of feedback and empathy in supporting task-based online English language learning.

Survey Analysis: Key Qualities of an Ideal Online Teacher

Research Question 1: What characteristics do learners consider essential for an ideal digital teacher, based on their task-related needs?

Learners' perceptions of the essential qualities of an ideal online English language teacher were examined through the survey, with descriptive statistics applied to highlight prevailing trends and preferences. The analysis revealed some variability in responses; however, one characteristic stood out prominently: "a good communicator who explains clearly," which was identified by 45.5% of participants. This finding underscores the importance learners place on clarity, structured explanations, and the ability to convey complex ideas effectively in an online learning environment.

Overall, the results indicate that effective communication is regarded as a core attribute for online educators, serving as a foundational quality that supports student engagement, comprehension, and successful completion of task-based activities. The table below presents the descriptive statistics and correlations for learners' responses regarding the essential characteristics of an ideal online English teacher in online English language acquisition.

Table 1 Descriptive Statistics and Correlations for Study Variables (Clear Communication as an Essential Characteristic of an Ideal Online Teacher in Online English Language Learning)

Variable	<i>M</i>	<i>Mdn</i>	<i>SD</i>	<i>Skew</i>	<i>Kurt</i>
Clear Communication	4.46	4.00	0.50	0.20	-1.96

Note. The Table 1 represents responses to RQ1 regarding clear communication in online English language acquisition.

M = Mean; *Mdn* = Median; *SD* = Standard deviation; *Skew* = Skewness; *Kurt* = Kurtosis.

These results indicate that while a range of qualities was acknowledged, certain traits, particularly clear communication, stood out as significantly more important to learners. The positive skewness of the data reflects a concentration of responses around this dominant preference, suggesting a strong collective perception of what constitutes effective online teaching.

Overall, the analysis highlights essential expectations towards online educators, emphasizing that learners regard effective, understandable communication as a cornerstone of professional competence in online teaching environments. These insights can inform teacher training, curriculum design, and ongoing professional development in online education contexts.

Survey Analysis: Ideal Online English Teacher Availability

Research Question 2: According to learners, what is the optimal availability for an online English teacher to support task-based learning?

Learners' perceptions of teacher availability were examined through the survey, with descriptive statistics applied to identify prevailing trends. The analysis revealed a notable degree of variability in responses; however, the most frequently selected characteristic, representing the mode, was "flexible schedule depending on student needs," chosen by 45.5% of respondents ($n = 200, f = 91$). This result underscores the importance learners place on adaptability in scheduling, suggesting that the ability of an online teacher to adjust their availability to meet individual student needs is a key factor in supporting effective task-based learning.

These findings highlight that, alongside clear communication, flexibility in teacher availability is considered an essential quality for educators in digital learning environments. Although the sample size is relatively small, the results provide insight into learners' priorities, indicating that responsiveness and accessibility play a critical role in fostering engagement and facilitating successful online learning experiences. The following Table 2 represents the descriptive statistics and correlations for learners' responses regarding the preferred availability of an online English teacher.

Table 2 Descriptive Statistics and Correlations for Study Variables (Flexible Scheduling as an Essential Characteristic of an Ideal Online Teacher)

Variable	<i>M</i>	<i>Mdn</i>	<i>SD</i>	<i>Skew</i>	<i>Kurt</i>
Flexible Scheduling	4.46	4.00	0.50	0.20	-1.96

Note. The Table 2 represents responses to RQ2 regarding flexible scheduling in online English language acquisition.

M = Mean; *Mdn* = Median; *SD* = Standard deviation; *Skew* = Skewness; *Kurt* = Kurtosis.

While there was some variability in the distribution of responses, distinct patterns emerged regarding preferred teacher availability. This variability underscores the critical role of "flexibility" and "responsiveness" in promoting a supportive and effective virtual learning environment. These results reinforce students' perception that teachers' availability should align with diverse schedules and learning requirements.

Survey Analysis: Qualities of an Online Teacher to Support Task-Oriented Goals

Research Question 3: *How do learners evaluate the importance of an online teacher’s feedback and guidance in supporting the successful completion of task-oriented activities?*

A survey was conducted to evaluate the importance of an online teacher’s “empathy” and “understanding” in supporting task-oriented learning within virtual environments. The collected data were analyzed using descriptive statistical methods to assess the extent to which learners value these qualities.

The results indicate a strong preference for empathy and understanding, with 72.7% of respondents rating these qualities as “very important,” and 27.3% considering them “important.” Notably, no respondents selected neutral or negative responses, emphasizing the widespread recognition of empathy and understanding as critical variables for effective online teaching. The following Table 3 represents the descriptive statistics and correlations for learners’ responses regarding the preferred qualities of an online English teacher.

Table 3 Descriptive Statistics and Correlations for Study Variables (Empathy and Understanding in Online English Language Acquisition)

Variable	<i>M</i>	<i>Mdn</i>	<i>SD</i>	<i>Skew</i>	<i>Kurt</i>
Empathy and Understanding	4.73	5.00	0.43	-1.15	-0.67

Note. The Table 3 represents responses to RQ3 regarding empathy and understanding in online English language acquisition.

M = Mean; *Mdn* = Median; *SD* = Standard deviation; *Skew* = Skewness; *Kurt* = Kurtosis.

These findings underline the critical role of empathy and understanding in fostering student engagement, motivation, and overall satisfaction in online education. The strong preference for these qualities emphasizes that learners highly value teachers who demonstrate emotional intelligence and are attuned to their needs and concerns in a virtual setting.

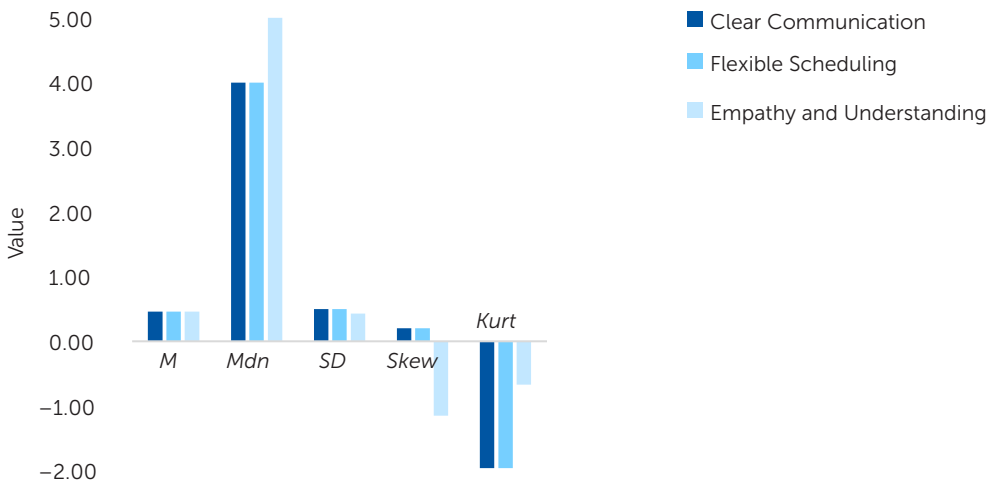


Figure 1 Statistical Summary of Study Variables

Note. A quantitative analysis was conducted to evaluate three key study variables: “clear communication”, “flexible scheduling”, and “empathy and understanding”.

The visual representation of statistical summary and correlations for study variables is presented in Figure 1, illustrating the *M* (mean), *Mdn* (median), *SD* (standard deviation), *Skew* (skewness), and *K* (kurtosis) for each variable.

The mean scores for “clear communication” and “flexible scheduling” were both 4.46, while “empathy and understanding” received a higher mean of 4.73, indicating stronger positive perception. Median values mirrored this pattern (4.0 for communication and scheduling, 5.0 for empathy), reflecting clustering at the highest level for empathy. Standard deviations were low (0.43–0.50), with empathy showing the least variability (0.43). Skewness was near zero for communication and scheduling, whereas empathy exhibited negative skew (–1.15), showing concentration at the upper end. Kurtosis values were negative for all variables (–1.96 for communication and scheduling, –0.67 for empathy), suggesting relatively flat distributions. Overall, “empathy and understanding” emerged as the most valued and consistently endorsed quality. Table 1 presents a detailed overview of these correlations (see Table 1).

Focus group participant discussion

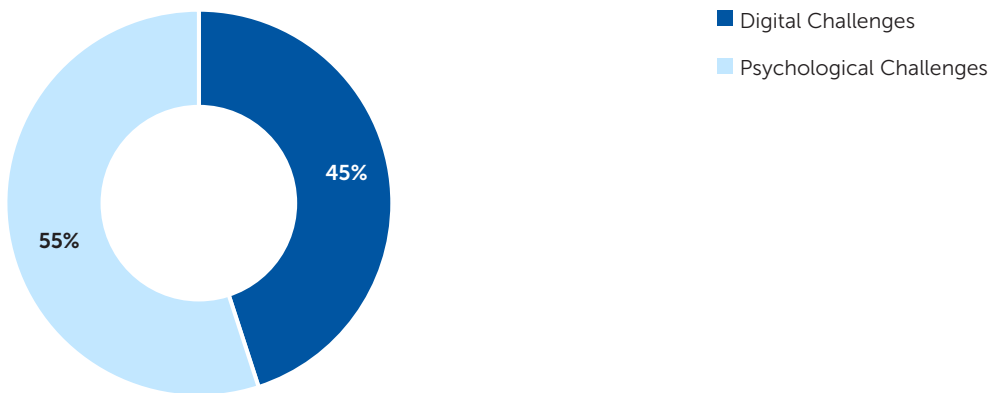


Figure 2 Challenges Faced by Future Teachers Percentage of respondents reporting digital and psychological challenges

Note. Data are based on responses from 200 adult participants in online English courses.

Focus group analysis identified two main categories of challenges to developing future teachers’ professional competence: digital and psychological. About 45% of respondents reported digital barriers, such as limited access to technology, insufficient training, and rapid technological change, while 55% emphasized psychological challenges, including stress, resistance to new technologies, and the mental demands of adapting to digital teaching. Overall, psychological challenges were slightly more prevalent.

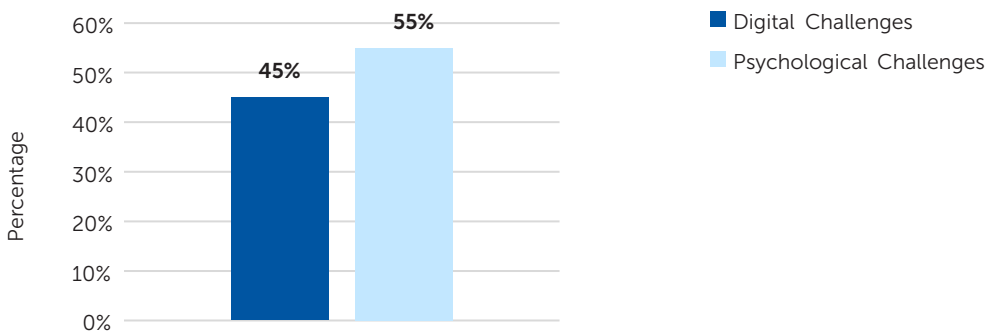


Figure 3 Challenges Faced by Future Teachers. Percentage of respondents reporting digital and psychological challenges

Note. Data from 200 adult online English learners indicated two main challenges to enhancing future teachers' professional competence: digital (45%) and psychological (55%), with psychological challenges reported slightly more frequently.

Building on the identification of digital and psychological challenges, Table 4 presents the correlations between these factors in online English language acquisition.

Table 4 Descriptive Statistics and Correlations for Study Variables (for Psychological and Digital Challenges)

Variable	Psychological Challenges	Digital Challenges
Value (%)	55	45
<i>M</i>	50.0	50.0
<i>Mdn</i>	50.0	50.0
<i>SD</i>	7.07	7.07
<i>Skew</i>	0.0	0.0
<i>Kurt</i>	-2.0	-2.0

Note. The Table 4 represents correlations for psychological and digital challenges in online English language acquisition.

M = Mean; *Mdn* = Median; *SD* = Standard deviation; *Skew* = Skewness; *Kurt* = Kurtosis.

Descriptive statistics reveal a mean and median of 50%, indicating a balanced distribution between the two challenge types. The standard deviation of 7.07 reflects moderate variability, while a skewness of 0.0 shows symmetry in responses. Kurtosis at -2.0 suggests a relatively flat distribution, typical for data with only two categories. Although both digital and psychological factors were noted, participants particularly emphasized psychological challenges as influencing the development of professional competence. To further explore relationships among the identified teacher qualities, a Pearson correlation matrix was generated.

Table 5 Correlations between study variables

Variable 1	Variable 2	r
Clear communication	Flexible scheduling	0.78
Clear communication	Empathy and understanding	0.65
Flexible scheduling	Empathy and understanding	0.60

Note. r = correlation coefficient between the corresponding variables. All correlations are significant at $p < .01$.

The analysis revealed strong positive correlations between “clear communication” and “flexible scheduling” ($r = 0.78$), and moderate to strong correlations between “clear communication” and “empathy and understanding” ($r = 0.65$), as well as between “flexible scheduling” and “empathy and understanding” ($r = 0.60$) (Kaiser & Rice, 1974). These results reinforce the internal consistency and conceptual coherence of the study variables.

The Pearson correlation analysis revealed strong, significant positive relationships among the key variables: “clear communication” and “flexible scheduling” ($r = 0.78$), with moderate to strong correlations between each of these and “empathy and understanding” ($r = 0.65$ and $r = 0.60$, respectively; $p < .01$). These results confirm the conceptual coherence of the measurement framework and the meaningful interrelation of the study variables.

Overall, survey results revealed three competences most valued by learners: clear communication, flexible scheduling, and empathy and understanding. Communication clarity was regarded as a foundation for effective learning, while flexibility in scheduling reflected the need for adaptable teacher availability in digital contexts. Most notably, empathy emerged as the highest-rated competence, underscoring the role of socio-emotional support in sustaining motivation and engagement.

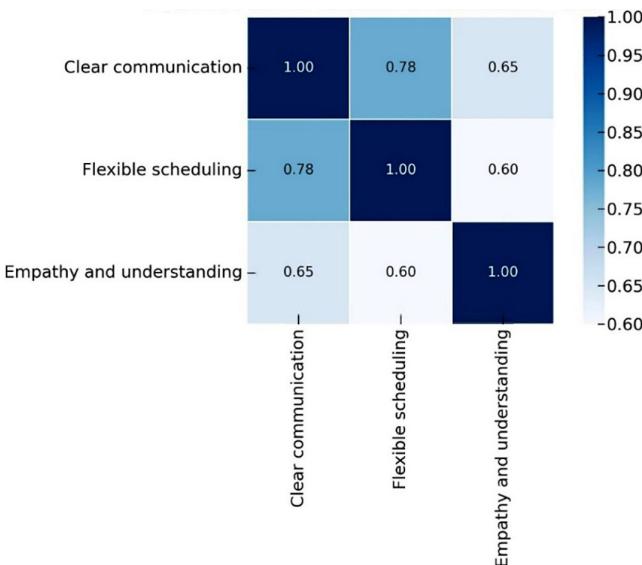


Figure 4 Pearson correlation matrix among study variables and correlations

Note. All correlations are significant at $p < .01$.

Focus group discussions reinforced these findings, highlighting that learners value not only digital proficiency but also teachers' ability to respond to psychological challenges, such as stress and adaptation to new technologies. Overall, the results suggest that professional development for online teachers must integrate technical, pedagogical, and emotional competences in a coherent framework.

Discussion

The present study extends previous research on task-based language teaching by highlighting learners' perspectives on teacher professionalism in digital contexts. While prior studies have emphasized digital competence and task design (Ellis, 2021; Long, 2015), the findings of this study reveal that relational competences – particularly empathy and flexible scheduling – are equally essential for effective online teaching. This suggests that teacher training programs should integrate not only technical and methodological skills, but also socio-emotional development and psychological resilience. Such emphasis on empathy as a measurable competence is a novel contribution to the field, bridging the gap between task-based pedagogy and emotional (affective) dimensions of online teaching.

This research contributes to the growing body of research on task-based language teaching in digital environments by foregrounding learners' perspectives on teacher professionalism. While prior work has largely emphasized technical and methodological competences (Ellis, 2021; Long, 2015), findings from this study demonstrate that relational competences – empathy, flexibility, and clarity – are equally central to effective online teaching.

The task-based needs analysis examined learners' perspectives on teacher professionalism in online English language learning, focusing on task-based approaches and socio-emotional online environments. No rotation matrix was applied, as the study centered on the reliability and correlations of three variables: “clear communication,” “flexible scheduling,” and “empathy and understanding.” Cronbach's alpha of 0.87 indicated high internal consistency, confirming that these variables reliably measure a common construct.

“Empathy and understanding” emerged as the most valued attribute ($M = 4.73$), highlighting the importance of emotional intelligence in effective online teaching. “Clear communication” and “flexible scheduling” were rated similarly, reflecting the secondary but still significant role of clarity and flexibility. Pearson correlations showed strong links between “clear communication” and “flexible scheduling” ($r = 0.78$) and moderate correlations with empathy ($r = 0.65$ and $r = 0.60$), supporting the conceptual coherence of the framework. Empathy, in particular, emerged as the most highly valued competence, surpassing digital and organizational skills. This underscores that task completion in online settings depends not only on instructional design but also on teachers' ability to foster trust, reduce anxiety, and maintain motivation. Another contribution lies in identifying the interrelation between competences: communication clarity, scheduling flexibility, and empathy are not isolated skills but mutually reinforcing qualities that shape

the learner experience. This insight suggests that teacher training should adopt a holistic approach, addressing both technical/digital competences and psychological resilience.

Finally, the study highlights practical implications for curriculum design and teacher development programs: incorporating empathy as a measurable competence, designing flexible interaction models, and balancing digital literacy with socio-emotional training. Together, these findings provide a methodological framework that bridges theory and practice in socio-emotional, digitally mediated ESL classrooms.

Conclusions

This study examined the professional competences of online language teachers from the perspective of adult learners, using a task-based needs analysis grounded in the Latvian Teacher Professional Standards (Skolotāja profesijas standarts, 2020). Three research questions guided the investigation: essential teacher characteristics, optimal availability, and the role of feedback in task-based learning.

Findings indicate that learners prioritize empathy and understanding ($M = 4.73$), highlighting the centrality of emotional intelligence in online teaching. Clear communication and flexible scheduling (both $M = 4.46$) were also highly valued, emphasizing the importance of clarity, structure, and adaptability. Correlation analyses showed strong positive relationships among these competences, suggesting that they are interrelated and collectively contribute to effective online teaching.

Focus group data revealed that psychological challenges such as fostering empathy, managing engagement, and supporting individual needs were slightly more prominent than digital barriers, underscoring the importance of professional development addressing both technical skills and emotional resilience.

Overall, an ideal online teacher combines pedagogical expertise, emotional intelligence, and flexible organization to support task-oriented learning. Practical implications include enhancing communication clarity, offering adaptable schedules, and demonstrating empathy to improve learner satisfaction and engagement.

Ethical considerations were carefully addressed: all participants provided informed consent, and data were anonymized and used solely for research purposes, ensuring compliance with institutional ethical guidelines.

The study has some limitations, including a relatively small and demographically homogeneous sample, which may affect the generalizability of the findings. Future research should involve larger and more diverse populations and examine how teacher competences impact measurable learner outcomes in online environments.

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ADULT LEARNERS' PERSPECTIVES ON DIGITALIZATION IN ONLINE LANGUAGE LEARNING: A SURVEY-BASED STUDY

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ABSTRACT

The rapid advancement of digital technology has transformed online language learning, offering new opportunities for adult learners. This study explores adult learners' perspectives on digitalization in online English language learning, focusing on their experiences, challenges, and benefits. Through a survey-based approach, data were collected from adult learners engaged in digital language learning environments. The findings reveal that digital tools enhance accessibility, flexibility, and engagement, but learners also face challenges such as technological barriers, lack of interaction, and self-discipline issues. Participants emphasized the importance of user-friendly platforms, interactive content, and personalized learning paths to improve the effectiveness of online language learning. Additionally, the study highlights the role of digitalization in fostering student-centered learning by providing adaptive resources and self-paced study opportunities. The results contribute to the ongoing discussion on integrating technology in language education and offer insights for educators, policymakers, and platform developers to enhance digital learning experiences. Future research could explore the impact of specific digital tools on language acquisition and compare the effectiveness of different online learning strategies.

Keywords: *adult learners, digitalization, educational technology, online English language learning, student-centered learning*

Introduction

The rapid advancement of digital technology has led to significant changes in the field of education, particularly in the domain of language learning. Online platforms, enriched by digital tools, have opened up new avenues for adult learners to engage in language acquisition outside traditional classroom settings. These digital environments provide learners with flexible, and accessible learning opportunities, alongside a range of resources that were previously unavailable, allowing them to study at their own pace and on their own terms. However, despite these opportunities, there are still challenges associated with the digitalization of language learning.

With the rapid digitalization of education, particularly accelerated during and after the COVID-19 pandemic, teachers are required to re-think their learning designs (LDs) to meet the needs of online and blended learning environments (Ginzburg & Daniela, 2022, 2023, 2024). Recent studies on online language learning emphasize not only the effectiveness of learning activities but also the quality of interaction, including cooperation, collaboration, and engagement with both teachers and peers (Ginzburg & Daniela, 2022, 2024). These studies further explore how course structure and modality, whether face-to-face, fully online, or blended, impact adult learners' perceptions and outcomes, highlighting the importance of designing interactive and flexible learning environments (Ginzburg & Daniela, 2023).

This study investigates adult learners' experiences with digital language learning environments, highlighting both the benefits and challenges they face. It examines the impact of digital tools on engagement, accessibility, flexibility, autonomy, and self-regulation, and aims to inform the design of online English language learning platforms that effectively address the specific needs of adult learners. To achieve this goal, the primary research question guiding this study is *'How do adult learners perceive the role of digital tools in online language learning, and what challenges and benefits do they associate with their use?'* This question is formulated to capture the nuances of adult learners' experiences and provide a comprehensive understanding of the factors that contribute to the success or failure of digital language learning platforms. Hence, the following research questions are formed:

1. How do adult learners perceive the role of digitalization in online English language learning?
2. What are the main benefits and challenges adult learners face in digital language learning environments?
3. How do digital tools and platforms influence learner engagement, motivation, and self-discipline?
4. What features do adult learners consider essential for an effective digital language learning platform?
5. How can digitalization enhance adult learners' engagement and personalized language acquisition?

To answer the research questions, this study reviews the theories of Bolliger and Halupa (2018), Laurillard (2012), Knowles (1980), and Moore (1989), as well as recent research on digital language learning by Ginzburg and Daniela (2022, 2023, 2024). Their concepts on effective online education are reconsidered in the context of the post-pandemic era, with particular attention to how cultural aspects and learners' characteristics interrelate and influence engagement, autonomy, and learning outcomes. The data collected from questionnaires were then analyzed using thematic analysis to explore adult learners' experiences and perceptions.

The Significance of the Study

The significance of this study lies in its contribution to the ongoing discussion about the integration of technology into education, particularly in online English language learning. While there is a growing body of literature on the benefits of digitalization in education, adult learners often face distinct challenges and opportunities that differ from those encountered by younger students. By focusing specifically on the adult learner cohort, stratified by age group, prior digital learning experience, and language proficiency level, this research provides insights into how online English language learning environments can be tailored to address their needs. The findings are particularly relevant for educators, policymakers, and platform developers who aim to optimize online English learning experiences for adults. Furthermore, this study contributes to understanding how digitalization can foster a student-centered learning approach, empowering adult learners to take greater control over their educational journeys.

The scientific novelty of this study lies in its exploration of adult learners' specific perspectives on digitalization in online English language learning, a topic that has been studied broadly but often without a targeted focus on the experiences, challenges, and needs of adult learners. This research provides fresh insights into the impact of digital tools on accessibility, engagement, and flexibility in language learning, as well as the unique barriers adults face, such as technological challenges and self-discipline issues. Additionally, it contributes to the ongoing discussion on student-centered learning by emphasizing adaptive and personalized digital resources.

In sum, this research contributes to the evolving understanding of digitalization in adult education by connecting empirical findings with established theories of online learning and digital pedagogy. It seeks to offer evidence-based recommendations for educators, policymakers, and digital learning platform designers to enhance the quality and accessibility of online language learning for adult populations. By focusing on learners' experiences, this study addresses critical issues of digital engagement, learner autonomy, and instructional design in contemporary language education.

The primary learning objectives of this study are:

- a) To explore adult learners' perceptions of digitalization in online English language learning;
- b) To identify the main benefits and challenges they experience in digital language learning environments;
- c) To examine how digital tools and platforms affect learner engagement, motivation, and self-discipline;
- d) To determine which features adult learners consider essential for an effective digital language learning platform;
- e) To provide evidence-based recommendations for enhancing adult learners' engagement and personalized language acquisition through digitalization.

The theoretical framework guiding this research integrates both classic and contemporary perspectives on adult learning and online education. Knowles' (1980) theory of andragogy emphasizes the self-directed nature of adult learning, highlighting autonomy

and relevance in instructional design. Moore's (1989) theory of transactional distance provides a lens to analyze how psychological and communicative gaps affect engagement in online environments. Garrison, Anderson, and Archer's (2000) Community of Inquiry framework and Laurillard's (2012) Conversational Framework further inform the study by emphasizing the roles of social, cognitive, and teaching presence, as well as iterative dialogue and feedback, in effective digital learning. Building on these foundations, recent research by Bolliger and Halupa (2018), Ginzburg (2022, 2023), and Daniela (2023, 2024) highlights post-pandemic adaptations, culturally responsive design, and strategies to enhance motivation, autonomy, and engagement in adult online language learning. Collectively, these perspectives provide a comprehensive lens for examining the design, implementation, and effectiveness of digital language learning environments for adult learners.

Together, these theoretical foundations provide a critical and contextually grounded framework for examining adult learners' experiences with digital tools and pedagogical strategies in online language learning. In this study, digitalization refers specifically to the integration of technological resources such as Learning Management Systems, interactive exercises, and communication tools into the design of online language courses. By bridging classical theories of adult education with contemporary research on technology-enhanced learning (e.g., Ginzburg, 2022, 2023; Daniela, 2023, 2024), the study explores how these digital tools and approaches impact learner autonomy, engagement, and personalized learning pathways. This framework ensures that the analysis reflects both established principles of adult learning and recent insights into effective online pedagogy.

Methodology and Research Design

This study employed a mixed-methods survey design to examine adult learners' experiences in digital language learning environments. The survey instrument was specifically developed to capture both quantitative and qualitative insights, including closed-ended questions for descriptive analysis and open-ended questions to explore participants' perspectives in depth. The questionnaire was piloted with a small group of learners to ensure clarity, relevance, and reliability of the items.

Data were collected through online surveys distributed to adult learners enrolled in selected online English language learning programs in Latvia, focusing on [specific language, e.g., English] courses. The participants represented a range of ages, professional backgrounds, and digital literacy levels. Surveys were accessible across multiple devices to maximize participation. While the target population was broader, the final dataset included responses from 200 participants who completed the survey in full, providing both quantitative and qualitative data for analysis.

The study sample comprised adult learners from Latvia who were actively participating in online English language courses. Participants varied in age, language proficiency, and prior experience with online learning environments. This diversity enabled the examination of how different learner characteristics might influence experiences

with digitalized language learning. Qualitative thematic analysis of open-ended survey responses, alongside descriptive examination of closed-ended questions, was conducted to investigate adult learners' experiences with digital language learning via tools such as Zoom, Jamboard, and Google Forms. Learner demographics, including age, prior digital learning experience, and language proficiency, were considered to provide a nuanced understanding of how different learner profiles interact with and are influenced by these digital environments.

Research Procedure

Quantitative data were collected via Google Forms using an online questionnaire developed within the framework of the European Social Fund Plus Project No. 4.2.4.2/1/24/I/001, *Support for Adult Education Based on Individual Needs*. The survey aimed to assess adult learners' perspectives on digitalization required for effective online English language learning.

The survey was developed and piloted between July and September 2024 during the project's first stage, with further refinements made in the second stage. It contained both closed- and open-ended questions to ensure a comprehensive exploration of learners' experiences. For the purposes of this article, the analysis focuses on five open-ended questions addressing key areas: *"flexibility"*, *"convenience"*, *"engagement through interactivity"*, *"self-discipline issues"*, *"technological awareness"*, and *"social interaction."* The items were grounded in theories of modern scholars, classical frameworks, as well as the Latvian Teaching Profession Standards (2020) and the Guidelines for the Implementation of On-site, Blended, and Remote Learning (2021).

Survey analysis

A total of 200 participants, all from the same location but with diverse academic backgrounds, took part in the survey. The sample consisted of 65% women and 35% men, with an average age of 37 years. The questionnaire was administered between January 2 and January 31, 2025, and the data were analyzed using Microsoft Excel. All procedures adhered to established ethical research standards, including full compliance with the General Data Protection Regulation (hereinafter – GDPR). Descriptive statistics, including measures such as M (mean) and SD (standard deviation), were calculated from the closed-ended survey items to provide an overview of participants' general perceptions on key aspects of digitalization, such as *"flexibility and convenience"*, *"AI-based feedback"*, and *"platform complexity"*. At the same time, responses to the open-ended questions were analyzed thematically using MAXQDA, a qualitative data analysis (QDA) software, which enabled coding and the identification of recurrent themes and significant viewpoints. By combining descriptive statistical analysis with qualitative thematic coding, the study employed methodological triangulation, ensuring that the quantitative trends were complemented by deeper qualitative insights. This approach provided a more comprehensive understanding of both the measurable patterns and the nuanced experiences of adult learners in digital language learning environments.

Thematic analysis

Open-ended survey responses are particularly well-suited for thematic analysis, as this method provides a structured way to interpret the rich, qualitative data that respondents generate when given the freedom to articulate their experiences and viewpoints. Unlike quantitative approaches, which prioritize numerical trends, thematic analysis focuses on examining patterns within textual data, allowing researchers to capture the complexity, depth, and variability of human perspectives (Braun & Clarke, 2006).

Surveys that include open-ended questions offer a valuable opportunity to explore diverse respondent experiences that might otherwise be obscured by standardized answer options. Thematic analysis, in this context, enables a systematic interpretation of these narratives, identifying recurring ideas, meanings, and perceptions across a dataset. This process facilitates a deeper understanding of participants' views, enhancing the richness of survey findings beyond what quantitative metrics alone can reveal. Thematic analysis was applied to the open-ended responses in order to identify recurring patterns and meanings in participants' perspectives. Following the established methodological guidelines (Nowell et al., 2017), the analysis enabled the systematic coding of data and the development of themes, which were subsequently interpreted in relation to the research questions and existing literature.

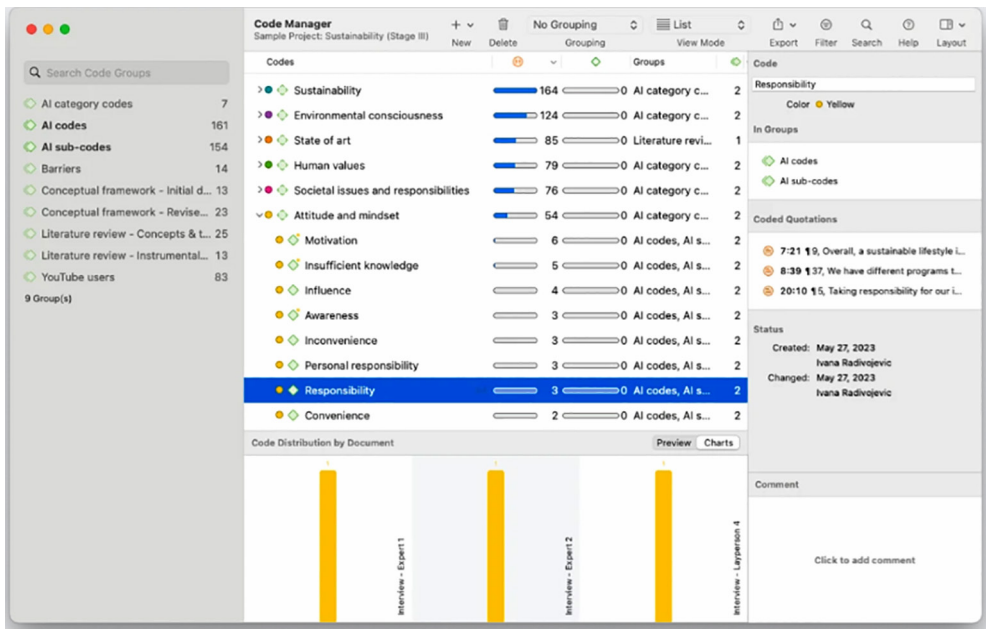


Figure 1 Undertaking Thematic Analysis for Open-Ended Responses

Note. Code Manager interface in MAXQDA, showing sample project "Sustainability (Stage III)". Source: MAXQDA software (VERBI Software, 2022)

This software facilitated a rigorous thematic analysis in line with Braun and Clarke's (2006) framework. The responses to five open-ended questions were imported into MAXQDA, where a structured coding process was undertaken. Initial codes were generated inductively through close reading of the text, identifying meaningful segments and recurring patterns without imposing preconceived categories. These codes were then refined, grouped, and organized into overarching themes that reflected participants' experiences and perceptions. Using MAXQDA's visualization tools, the analysis systematically identified five major themes: *"flexibility and convenience"*, *"engagement through interactivity"*, *"challenges with self-discipline"*, *"technology as a double-edged sword"*, and *"the need for more social interaction"*. The software also supported analytic transparency by allowing for traceable coding trails and inter-code comparisons, ensuring consistency and reliability in interpreting the qualitative data.

The following direct quotations illustrate how participants' responses aligned with the key themes identified through the MAXQDA-assisted thematic analysis. These examples provide contextual depth and highlight the diversity of experiences and viewpoints among adult learners in digital language learning environments:

Thematic analysis of open-ended responses revealed five major themes. Flexibility and convenience were highlighted, with participants noting the ability to learn at their own pace and balance studies with work (e.g., P1-Y, age 32). Engagement through interactivity emerged as another key theme, as gamified quizzes and AI-based feedback were reported to enhance motivation and understanding (P2-O, age 45). Challenges with self-discipline were frequently mentioned, particularly the difficulty of maintaining motivation without direct teacher supervision (P3-Y, age 28). Technology was described as a double-edged sword; while digital tools were valued, technical issues and platform complexity posed challenges (P4-O, age 37). Finally, a need for more social interaction was evident, with respondents expressing interest in live classes and discussion forums to support peer learning (P5-Y, age 41).

Participants were coded using a structured system: "P" indicates the participant number, a letter denotes age group (Y = young adults, M = middle-aged, O = older adults), and additional codes were used for prior digital learning experience (novice, intermediate, advanced) and language proficiency level (beginner, intermediate, advanced). This coding enabled comparisons across demographic profiles and supported a nuanced understanding of adult learners' experiences.

To gain a deeper understanding of adult learners' experiences with digital language learning, the open-ended survey responses were analyzed thematically. The analysis revealed five interrelated themes, supported by participant quotations coded according to age group (Y = younger adults, M = middle-aged adults, O = older adults), prior digital learning experience (E = experienced, N = novice), and language proficiency (H = high, L = low).

Thematic analysis of the open-ended survey responses was conducted using MAXQDA, where each participant was assigned a unique code reflecting their demographic profile, including age group, prior digital learning experience, and language proficiency. Responses were systematically coded to identify recurring patterns, resulting in five interconnected themes: flexibility and convenience, engagement through interactivity,

challenges with self-discipline, technology as a double-edged sword, and need for more social interaction. Learners consistently emphasized the flexibility of digital platforms, allowing them to study at their own pace and balance learning with work, while interactive elements such as gamified exercises and AI-based feedback enhanced engagement. Challenges with self-discipline were prominent, particularly among participants with less structured learning habits (e.g., P03, older adult with limited prior digital experience), while younger or more digitally experienced learners (e.g., P12, P15) engaged more readily with interactive features. Technological aspects were experienced as both enabling and limiting: platforms facilitated learning but posed difficulties for some due to complexity or technical issues. Finally, the need for social interaction emerged across all groups, with learners expressing a desire for live classes, discussion forums, and collaborative activities to support peer learning. By coding responses according to participant characteristics, the analysis highlights how learner profiles shape experiences with digital language learning, offering insights for designing more effective and inclusive digital platforms.

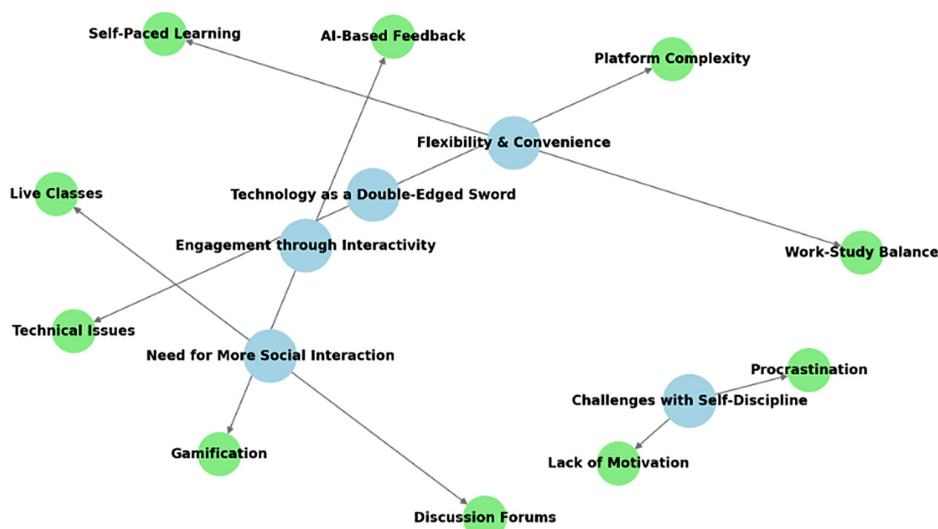


Figure 2 Thematic Analysis Map of Open-Ended Responses

The thematic analysis of the open-ended survey responses revealed five major interconnected themes: “flexibility and convenience”, “engagement through interactivity”, “challenges with self-discipline”, “technology as a double-edged sword”, and “need for more social interaction”. Figure 2 presents a thematic map that visually represents the relationships between these core themes and their associated sub-themes.

As shown in Figure 2, the notion of “flexibility and convenience” is linked with perceptions of self-paced learning, “AI-based feedback”, and “platform complexity”, illustrating how digital tools offer both freedom and usability challenges. Similarly, the aspect of “engagement through interactivity” connects with sub-themes such as gamification and live classes, highlighting that interactive elements enhance motivation but are also intertwined with learners’ need for real-time engagement.

The notion “challenges with self-discipline” clusters around issues like procrastination and lack of motivation, while “technology as a double-edged sword” captures the tension between technological affordances and frustrations such as technical issues or complex platform design. Finally, need for “more social interaction” encompasses calls for more live classes, discussion forums, and other mechanisms to foster peer-to-peer connection.

Results

A recent survey examining adult learners’ perceptions of digitalization in online language education revealed overwhelmingly positive attitudes toward technological integration (see Table 1). Approximately 80% of respondents agreed that digitalization has significantly enhanced their access to language learning opportunities. In addition, 72% reported that digital tools facilitated self-paced learning, allowing them to better manage their individual progress. Furthermore, 65% of participants believed that digital learning environments promote greater engagement than traditional classroom-based methods. Despite these benefits, 30% of respondents expressed concerns regarding the diminished level of personal interaction with instructors, highlighting an area where digital learning may fall short in replicating the interpersonal dynamics of face-to-face education.

Table 1 Descriptive Statistics and Study Variables (Participant Agreement with Online English Language Learning Aspects)

Survey Item	(%)	<i>n</i>	<i>M</i> (S-point)	<i>SD</i>
Digitalization improved access	80%	160	4.2	0.9
Digital tools helpful for self-paced learning	72%	144	4.0	1.0
Digital learning enhances engagement	65%	130	3.9	1.1
Concern about lack of personal interaction	30%	60	2.8	1.2

Note. *n* (Agreement) indicates the number of participants who agreed with the survey item. *M* (mean scores) and *SD* (standard deviations) were calculated based on responses on a 5-point Likert scale.

The study examined the key benefits and challenges experienced by adult learners in digital language learning environments (see Table 2). Flexibility was identified as the most valued benefit, with 85% of participants ($n = 170$, $MS = 4.5$, $SD = 0.7$) emphasizing the importance of learning anytime and anywhere. Multimedia content, such as videos and interactive exercises, was appreciated by 70% ($n = 140$, $MS = 4.1$, $SD = 0.8$), while 60% ($n = 120$, $MS = 4.2$, $SD = 0.9$) highlighted the usefulness of adaptive learning technologies for tracking progress and personalizing content. At the same time, several challenges were reported. More than half of the participants (55%, $n = 110$, $MS = 3.8$, $SD = 1.0$) indicated difficulties in maintaining self-discipline and motivation. Technological issues, including connectivity and usability problems, were noted by 40% ($n = 80$, $M = 3.5$, $SD = 1.1$). Finally, 35% ($n = 70$, $M = 3.2$, $SD = 1.0$) expressed concerns about the lack of real-time interaction with instructors and peers, underscoring the continued importance of social engagement in online English language learning contexts.

Table 2 Descriptive Statistics and Study Variables (Benefits and Challenges of Online English Language Learning)

Category	Study Variable	%	<i>n</i>	<i>M</i> (5-point)	<i>SD</i>
Benefits	Flexibility (anytime, anywhere)	85	170	4.5	0.7
	Multimedia content availability	70	140	4.1	0.8
	Adaptive learning technologies	60	120	4.2	0.9
Challenges	Struggles with self-discipline	55	110	3.8	1.0
	Technological issues	40	80	3.5	1.1
	Lack of real-time interaction	35	70	3.2	1.0

Note. *n* (Agreement) indicates the number of participants who agreed with the study variable. *M* = mean score. *SD* = standard deviation.

The study also investigated the influence of digital tools included Zoom, Google Forms, Google Jamboard, and platforms, which supported the delivery of asynchronous modules, interactive exercises, and gamified elements on learner engagement, motivation, and self-discipline (see Table 3). Adult learners reported actively using platforms such as Zoom, Google Forms, and Google Jamboard, which supported various interactive and assessment activities. A large proportion of participants (78%, $n = 156$, $MS = 4.3$, $SD = 0.8$) indicated that gamification features, including badges and rewards, played a key role in motivating them to engage with course material. Additionally, 65% ($n = 130$, $MS = 4.0$, $SD = 0.9$) found that AI-driven feedback and language assessment tools integrated within these platforms enhanced their engagement by providing timely and personalized insights into their learning progress. Half of the respondents (50%, $n = 100$, $MS = 3.9$, $SD = 1.0$) reported that asynchronous learning options, such as recorded lessons and self-paced modules, supported sustained motivation by accommodating their individual schedules and learning preferences. Despite these advantages, 42% ($n = 84$, $MS = 3.6$, $SD = 1.1$) experienced challenges with time management, highlighting that while digital tools offer flexibility, they also require a high level of self-regulation that not all learners can maintain easily.

Table 3 Descriptive Statistics and Study Variables (Influence of Digital Tools on Engagement, Motivation, and Self-Discipline)

Study Variable	(%)	<i>MS</i>	<i>SD</i>
Gamification increases motivation	78%	4.3	0.8
AI-driven feedback improves engagement	65%	4.0	0.9
Asynchronous learning maintains motivation	50%	3.9	1.0
Struggles with time management	42%	3.6	1.1

Note. *n* (Agreement) indicates the number of participants who agreed with the study variable. *M* = mean score. *SD* = standard deviation. Digital tools and platforms included Zoom, Google Forms, and Google Jamboard, which supported the delivery of asynchronous modules, interactive exercises, and gamified elements.

Adult learners were also asked to identify essential features of an effective digital language learning platform (see Table 4). The majority (88%, $n = 176$, $MS = 4.4$, $SD = 0.7$) emphasized the importance of user-friendly navigation and clear instructional design,

highlighting intuitive interfaces as crucial for efficient learning. Seventy-five percent ($n = 150$, $MS = 4.1$, $SD = 0.8$) valued interactive exercises and real-time quizzes, which helped sustain engagement and reinforce comprehension. Additionally, 68% ($n = 136$, $MS = 4.0$, $SD = 0.9$) appreciated platforms offering AI-based personalized learning paths that adapted content to individual proficiency levels and learning styles. Over half of the participants (55%, $n = 110$, $MS = 3.8$, $SD = 1.0$) expressed a desire for more socially interactive features, such as discussion forums and live classes, indicating that opportunities for real-time communication and collaboration remain a vital component of the digital learning experience.

Table 4 Descriptive Statistics and Study Variables (Preferred Features for an Effective Online English Language Platform)

Study Variables	(%)	MS	SD
User-friendly navigation	88%	4.6	0.6
Interactive exercises and real-time quizzes	75%	4.3	0.8
AI-based personalized learning paths	68%	4.2	0.9
More social and interactive elements	55%	3.9	1.0

Note. % (Agreement) indicates the number of participants who agreed with the study variable. M = mean score. SD = standard deviation. Digital tools and platforms included Zoom, Google Forms, and Google Jamboard, which supported the delivery of asynchronous modules, interactive exercises, and gamified elements.

The majority of adult learners surveyed expressed a positive view of digitalization in supporting student-centered learning and personalized language acquisition (see Table 5). Eighty-two percent of participants ($n = 164$, $MS = 4.5$, $SD = 0.7$) agreed that personalized learning paths significantly enhance language acquisition by addressing individual needs and pacing. Seventy percent ($n = 140$, $MS = 4.1$, $SD = 0.8$) found AI-driven feedback particularly useful for identifying strengths and weaknesses, enabling more targeted and efficient study. Additionally, 65% of respondents ($n = 130$, $MS = 4.0$, $SD = 0.9$) reported that self-paced study options supported greater autonomy in learning, allowing them to manage their own progress. Half of the participants (50%, $n = 100$, $MS = 3.9$, $SD = 1.0$) also indicated that digital tools and platforms included Zoom, Google Forms, and Google Jamboard made learning more adaptable to their individual preferences and personal goals, emphasizing the potential of technology to facilitate highly personalized educational experiences.

Table 5 Descriptive Statistics and Study Variables (Student-Centered Learning and Personalization)

Study Variables	(%)	MS	SD
Personalized paths improve acquisition	82%	4.3	0.8
AI-feedback identifies strengths/weaknesses	70%	4.1	0.9
Self-paced study boosts autonomy	65%	4.0	0.9
Adaptability to individual preferences	50%	3.8	1.0

Note. % (Agreement) indicates the number of participants who agreed with the study variable. M = mean score. SD = standard deviation.

The analysis of survey responses highlights several key perceptions regarding the benefits of digital tools in language learning among 200 adult participants. Personalized learning paths were widely regarded as beneficial, with 82% of participants ($n = 164$, $MS = 4.3$, $SD = 0.8$) agreeing that they improve language acquisition. The relatively low standard deviation indicates consistent positive perceptions among learners.

AI-driven feedback was also valued, with 70% of respondents ($n = 140$, $MS = 4.1$, $SD = 0.9$) reporting that it helped identify strengths and weaknesses, though some variation exists in learners' experiences. Self-paced study options were seen as supporting learner autonomy, with 65% ($n = 130$, $MS = 4.0$, $SD = 0.9$) agreeing that they enhanced control over their learning process. Finally, 50% of participants ($n = 100$, $MS = 3.8$, $SD = 1.0$) highlighted the adaptability of digital tools to individual preferences as an important factor, but the higher standard deviation indicates differing experiences, suggesting that these tools are more effective for some learners than others.

Digital tools used in this study included platforms such as Zoom, Google Forms, and Google Jamboard, which provided interactive, self-paced, and AI-supported features to facilitate personalized learning experiences.

Thematic Analysis of Open-Ended Responses

The open-ended survey responses from 200 adult learners were analyzed thematically using MAXQDA. Each participant was assigned a unique code reflecting their demographic profile: participant number (P), age group (Y = younger adults, M = middle-aged adults, O = older adults), prior digital learning experience (N = novice, I = intermediate, E = experienced), and language proficiency (L = low, M = intermediate, H = high). This coding allowed for systematic comparisons across learner characteristics and provided a nuanced understanding of adult learners' experiences with digital language learning.

Flexibility and convenience emerged as a key theme, with nearly half of the participants emphasizing the ability to study at their own pace and fit learning around work or personal commitments. For example, a younger novice learner (P12-Y, I) noted, "I like that I can learn at my own pace and schedule," while a middle-aged experienced learner (P23-M, H) commented, "Digital tools allow me to balance work and studies easily." These reflections underscore how digital platforms support learners in managing their time and responsibilities, which many cited as a major advantage.

Engagement through interactivity was another prominent theme. Around 35% of learners specifically highlighted gamified quizzes and AI-based feedback as tools that sustained motivation and enhanced understanding. One older intermediate learner (P45-O, H) remarked, "Gamified quizzes keep me motivated to study," while a younger novice participant (P56-Y, L) added, "AI-based feedback helps me understand my mistakes immediately." These responses suggest that interactive features play a central role in keeping learners involved and reinforcing comprehension.

Challenges with self-discipline were frequently reported, particularly among those less accustomed to structured learning. Approximately one-third of participants described difficulties maintaining motivation without direct teacher supervision. An older novice

learner (P03-O, L) explained, “I struggle to stay motivated without a teacher present,” and a middle-aged intermediate participant (P15-M, H) added, “It’s easy to procrastinate without deadlines.” These insights indicate that while flexibility is valued, adult learners often need strategies or tools to help sustain focus and accountability.

Technology itself was described as both enabling and limiting. Around 30% of respondents noted frustrations due to technical issues or complex platform design. Comments such as “While digital tools are useful, technical issues can be frustrating” (P78-Y, H) and “Some platforms are too complex for beginners” (P34-M, L) illustrate that the benefits of digitalization can be partially offset by usability challenges.

Finally, the need for more social interaction emerged strongly, with over one-third of learners expressing interest in live classes, discussion forums, or other opportunities for peer collaboration. A younger novice participant (P91-Y, I) commented, “I wish there were more live classes for real-time conversation,” while an older experienced learner (P102-O, H) observed, “Discussion forums would help with peer learning.” These findings suggest that purely asynchronous or automated systems may not fully meet learners’ social and communicative needs, highlighting the importance of integrating collaborative features into digital platforms.

Overall, adult learners appreciated the flexibility, interactivity, and personalized engagement offered by digital platforms, yet they also faced challenges related to self-discipline, technical barriers, and limited social interaction. The patterns identified through participant coding reveal how age, prior digital experience, and language proficiency shape these experiences, providing valuable guidance for designing more effective, engaging, and inclusive digital language learning environments.

The survey revealed that adult learners generally perceive digital language learning positively, valuing increased access (80%), self-paced study (72%), gamification (78%), and AI-driven feedback (65%). Preferred platform features included user-friendly navigation (88%), interactive exercises (75%), AI-based personalization (68%), and social interaction options (55%). Thematic analysis of open-ended responses, coded by age, prior digital experience, and proficiency, identified five key themes: flexibility and convenience (e.g., P1-Y-N-L, P6-M-E-H), engagement through interactivity (P2-O-E-H, P9-M-N-L), challenges with self-discipline (P3-Y-N-L, P7-O-N-L), technology as a double-edged sword (P4-O-N-L), and the need for more social interaction (P5-Y-E-H, P12-M-E-H). Together, these findings highlight the benefits of flexibility, personalization, and interactivity, alongside challenges in self-discipline, technical usability, and social engagement, offering guidance for more effective and inclusive digital learning design.

Discussion

The findings of this study indicate that adult learners perceive digital language learning positively, particularly valuing flexibility, personalization, and interactivity. Flexibility emerged as the most appreciated benefit (M 4.5), enabling learners to study at their own pace while balancing professional and personal commitments, reflecting Knowles’ (1980)

principles of andragogy. This autonomy, however, interacts closely with learner motivation and self-regulation: while some participants thrive in self-paced environments, others struggle with maintaining engagement, demonstrating Moore's (1989) notion of transactional distance where reduced structure can lead to disengagement. Multimedia content (*M 4.1*) and AI-driven personalization (*M 4.2*) further enhance engagement by allowing learners to tailor their experience, showing that adaptive, learner-centered design is increasingly critical in contemporary digital platforms (Ginzburg and Daniela 2023).

Alongside these benefits, challenges related to self-discipline (*M 3.8*) and technological barriers (*M 3.5*) underscore the dual role of technology as both enabler and potential obstacle. Learners' difficulties with time management and occasional technical issues highlight that effective digital environments must balance innovative features with intuitive design and robust support. Gamification (*M 4.0*) and AI-feedback (*M 3.8*) were recognized as motivating, yet the variability in responses suggests that engagement strategies must be flexible and responsive to diverse learner profiles. Importantly, the need for social interaction remains salient: learners expressed interest in discussion forums and live sessions, emphasizing that even in digitized contexts, opportunities for collaboration and real-time communication are essential, aligning with the Community of Inquiry framework (Garrison, Anderson, & Archer, 2000).

Taken together, these results illustrate that digitalization expands access and personalization in adult language learning while simultaneously demanding careful design to support motivation, self-regulation, and social connection. User-friendly navigation (*M 4.6*) and interactive exercises (*M 4.3*) emerged as core requirements, demonstrating that technical usability and adaptive features are intertwined with pedagogical effectiveness. Ultimately, effective digital platforms should integrate structured guidance, engaging interactive elements, AI-based personalization, and opportunities for synchronous collaboration, thereby balancing learner autonomy with support and fostering inclusive, motivating, and sustainable learning experiences in a post-pandemic, highly digitized educational landscape.

Conclusions

This study investigated adult learners' perceptions of digitalization in online English language learning, addressing five key research questions. Regarding the first question, how adult learners perceive the role of digitalization, results indicate a broadly positive view. Eighty percent of participants recognized that digital tools significantly enhanced access to learning opportunities, while 72% valued the ability to study at their own pace. These findings reflect principles of adult learning that emphasize autonomy and self-directed study (Knowles, 1980) and suggest that digitalization is seen not only as a convenience but as a transformative factor in shaping modern language learning experiences.

In response to the second research question, concerning the main benefits and challenges, flexibility was identified as the most valued study variable, with 85% agreement

and a mean score of 4.5. Multimedia content and adaptive AI-supported features were also highly appreciated, with mean scores of 4.1 and 4.2 respectively, as they allowed learners to tailor study paths to their individual needs. At the same time, participants reported significant challenges, particularly in maintaining self-discipline, indicated by a mean score of 3.8, and dealing with technological issues, with a mean score of 3.5. Thirty-five percent of respondents noted the lack of real-time interaction as a concern, highlighting the importance of social presence. These findings align with Moore's (1989) Transactional Distance Theory, which emphasizes that reduced structure and limited dialogue can negatively affect engagement.

Regarding the third question, on how digital tools and platforms influence engagement, motivation, and self-discipline, results showed that 78% of learners credited gamification with increased motivation, while 65% highlighted the positive impact of AI-driven feedback. Nevertheless, variability in responses indicates that the effectiveness of these tools depends on individual learner preferences and prior experience. This supports contemporary observations that broad categories of digital tools may not capture the nuances of engagement, and effectiveness should be evaluated at the level of specific implementations (Ginzburg and Daniela, 2023).

In addressing the fourth research question about essential platform features, participants emphasized user-friendly navigation with a mean score of 4.6, interactive exercises at 4.3, and personalized learning paths at 4.2. More than half of the learners, 55%, expressed the need for stronger social interaction features, such as discussion forums or live sessions. These results indicate that learner-centered design, integrating usability, interactivity, and adaptive feedback, is crucial for sustaining engagement in online English language learning.

Finally, in response to the fifth question, regarding how digitalization can enhance engagement and personalized language acquisition, the findings demonstrate that well-designed platforms support autonomy, motivation, and adaptive learning, particularly when social presence and structured guidance are integrated. Blended approaches that combine digital flexibility with synchronous interaction may offer the most effective path for adult learners.

The study was conducted in accordance with local legislation and institutional requirements. Written informed consent was not required because participants were fully informed that their anonymized and aggregated responses would be used for research purposes. All participants were adults over 18 and did not belong to any vulnerable groups.

This study did not examine the effects of specific digital tools in isolation, such as AI tutors, VR environments, or specialized language learning apps, recognizing that the current digital landscape is vast and heterogeneous. Future research should analyze distinct tool categories to determine which features most effectively support engagement and learning outcomes. Additionally, comparisons between synchronous and asynchronous online formats, as well as investigations into the influence of digital literacy on

learner success, would provide valuable insights for optimizing adult language learning in increasingly diverse digital contexts.

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TEACHER PROFESSIONALISM IN ENSURING MINORITY STUDENTS' LINGUISTIC WELL-BEING DURING THE LEARNING PROCESS

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ABSTRACT

In light of recent changes in Latvian education policy mandating the provision of pre-school and school education in the official language, this study explores the necessity for teachers to develop new competences for working in ethnically and linguistically diverse groups.

The aim of this study is to identify the real professional needs of teachers to help minority students to achieve well-being, both when learning Latvian language and when using it in other school subjects.

The methods applied in this study draw on research examining how student well-being influences learning outcomes and inclusion in education (Nimante, 2021; Marsh et al., 2020; Svence, 2020; Elksne & Rubene, 2018) as well as on lingvodidactic theories (Martena, 2021; Nanquil, 2021; Fanany, 2018; Anspoka, 2016).

Empirical data were collected through a survey of 162 pre-school and primary school teachers and six focus group discussions involving 109 participants. This approach offered a deeper insight into teachers' understanding of the issue under investigation and their professional needs.

The results of the study indicate that teachers do understand the concept of linguistic well-being and recognise its importance in the educational process. However, to foster it, teachers need greater engagement from parents and society, as well as access to teaching and methodological tools and learning environments that support the differentiation and individualisation of teaching methods and work organisation. Furthermore, assessment methods for learning achievements should encourage students to learn the language of instruction and to use it regardless of their current level of proficiency.

The results are significant because they provide insights into the specific needs of teachers working with pre-school and primary school students from minority language backgrounds and promoting their linguistic well-being. Teachers need to support students in accessing educational content in the official language, Latvian, while also helping them improve their proficiency in it.

Keywords: *educational content, language anxiety, language teaching/learning, linguistic well-being, multimodal text*

Introduction

Against the backdrop of ongoing change and both social and individual stress, well-being is grounded in the psycho-emotional state of the individual – characterized by self-acceptance, satisfaction with one's environment and current circumstances, and positive relationships with others (Marsh et al., 2020; Svence, 2020; Fanany, 2018; Elksne & Rubene, 2018). Well-being is an important area of focus both in society at large and within specific contexts, including the educational process. Depending on how good or poor the sense of well-being is in a given situation, it can influence various aspects in the quality of life, higher level of well-being opening up opportunities to achieve goals more effectively and experience greater emotional satisfaction (Eksne & Rubene, 2018; Nanquil, 2021; Fanany, 2018).

Since the language an individual uses in a particular social environment is closely linked to how effectively they can think, perceive, concentrate, and communicate with others who speak the same language, linguistic well-being, as a part of overall well-being, is an important concern. In the context of education, ensuring linguistic well-being has become particularly relevant in Latvia following the transition to a unified school system, where, regardless of the stage of education, teaching is conducted exclusively in the official language, in Latvian. For approximately 37.7% of students, however, Latvian is not the language spoken at home (Population by ethnicity and age group; 2011–2024 (at the beginning of the 2024)).

In accordance with Latvian education policy various factors determine the need to help teachers teach Latvian language as a school subject and to use Latvian as a tool of instruction for other subjects. This highlights the importance of providing conditions in which students can feel comfortable, experience positive emotions, and avoid stress or fear of speaking and making mistakes. It is essential that they feel supported rather than punished for what they have not yet mastered but are still attempting to do.

Although proficiency in Latvian as the official language has increased significantly in recent years, various trends suggest that its use among ethnic minorities does not correspond to the number of its speakers. In Latvia, the self-sufficiency of Russian, as the largest minority language, remains particularly evident in the public space, especially in cities with a high proportion of Russian-speaking residents (Druviete, 2024). This implies that the social environment, including the family, does not always provide sufficient support for the student's language learning process.

The first and most essential condition for fostering linguistic feeling and promoting linguistic well-being in the educational process is the psychosocial safety of the student. This is particularly important for students who lack a supportive environment outside the educational setting or who, for various reasons, experience discrimination, exclusion, or uncertainty about how to behave and communicate appropriately across different linguistic and cultural environments.

In the Latvian context, this issue has become especially topical following the Russian invasion of Ukraine, as Ukrainian children have been forced to live in a new country and adapt to an unfamiliar education system, often without prior exposure to the Latvian

language. The situation is also relevant for those Latvian students with a minority language background who were not emotionally and cognitively prepared for the gradual shift to instruction in the official language.

Another key aspect of supporting linguistic well-being is the use of purposefully planned pedagogical resources that meet learners' linguistic and developmental needs. It is equally important that teachers are prepared to manage overlapping responsibilities – not only supporting the acquisition of subject content, but also integrating appropriate language tools into the learning process.

At the same time, attention must be paid to psycho-emotional state, ensuring that students feel secure and motivated to use the language of instruction. Language should not become an obstacle to learning content; instead, it must be understood and used – through speaking, reading, and writing.

The well-being of students in learning is a complex issue. It has already been addressed in several studies (Nimante, 2021; Marsh et al., 2020; Svence 2020; Elksne & Rubene, 2018). However, they are more concerned with the psychological or social aspect.

The aim of this study is to focus on the pedagogical aspect and to identify the real professional needs of teachers to help minority students to achieve well-being, both when learning Latvian language and when using it in other subjects.

Methodology

Quantitative and qualitative data were obtained by utilising semi-structured questionnaires administered via Google Forms for 162 pre-school and primary school teachers of and six focus group discussions involving a total of 109 participants. The survey questions were open-ended, except for the most general questions about teachers' education and work experience. This provided a deeper insight into teachers' understanding of the issue under investigation and their professional needs.

Focus group discussions were conducted with teachers participating in a professional development programme, involving 57 pre-school teachers and 52 primary school teachers. The participants worked either in pre-school groups or primary education classes with an average of 82% of students with a minority language background, or with 2–10% of such students. This variation in the proportion of minority students reflects whether the teachers worked in former minority education institutions or in schools where Latvian has consistently been the language of instruction.

Code of Ethics

Teachers were informed that they would be participants of the research and would be asked to provide their observations, opinion on the importance of minority student's well-being in the learning process and what teachers' real needs are to ensure it.

The General Data Protection Regulation and ethical considerations were respected and the study was approved by the Research Ethics Committee of Social Sciences and Humanities of the University of Latvia (January 11, 2023; Nr. 71-46/12).

A mixed-methods research design was used, as quantitative and qualitative data were interpreted using theories related to the research subject. This enabled more detailed answers to the research questions (Nimante, 2021; Marsh et al., 2020; Svence 2020; Elksne & Rubene, 2018; Martena, 2021; Nanquil, 2021; Fanany, 2018; Anspoka, 2016).

Data Collection and Analysis

Descriptive statistical methods have been used in the analysis of the data obtained in the study. The results were ranked and expressed as percentages, depending on the number of responses, and interpreted in relation to the purpose of the study.

The importance of this research lies in the need to strengthen the professional competence of pre-school and primary school teachers in practice – specifically, how to promote student learning achievements and their proficiency in Latvian as the official language by supporting the linguistic well-being of students from minority language backgrounds.

The study addresses the following research questions:

1. Do teachers understand what linguistic well-being is and what role it plays in the educational process?
2. What real help teachers need for support the linguistic well-being of students with a minority language background?

Results

An essential first step towards supporting teachers in strengthening the linguistic well-being of their students in an evidence-based way was to explore their understanding of the concept. A total of 300 questionnaires were distributed electronically, with responses received from 162 pre-school and primary school teachers. The question on linguistic well-being was open-ended, allowing teachers to respond freely. Content analysis of the responses focused on the part that revealed how teachers interpret the concept.

According to the findings, 97.5% of both pre-school and primary school teachers described linguistic well-being as a positive internal state – a sense of satisfaction or comfort in situations where the individual perceives information, feels they understand it, or can speak, read, or write freely as needed. This suggests that most respondents are familiar with the term and understand its meaning. However, more than half also noted that the term is rarely used in educational practice and that relevant theoretical literature is lacking.

Only 154 respondents answered the follow-up question on whether linguistic well-being is important in the learning process. Among them, 67.8% acknowledged its importance, but admitted that, due to high workloads and competing priorities, they do not address it explicitly in their work. This is already a serious problem and suggests that more attention should be paid to it in teacher training and in-service training programmes.

To gain deeper insight into teachers' understanding of linguistic well-being and its role in the educational process, it was important to explore whether they actively seek information on the topic and what aspects remain unclear to them.

Table 1 Linguistic well-being in the learning process

Awareness and interest in linguistic well-being	Share and count of teacher responses	
	%	<i>n</i>
Fully understand the concept	97.5	158
Recognise importance of the linguistic well-being	67.8	110
Interested in topic and open to learning more	44.7	72
Not interested in the topic	55.3	90

The following patterns emerged from the responses:

- 44.7% of teachers expressed a strong interest in the issue and reported regularly seeking information on how to ensure that language does not become a barrier to learning or daily communication within the educational process. These respondents believe that linguistic well-being can be enhanced when students receive targeted support in the learning process, tailored to their actual needs.
- The remaining 55.3% did not consider these questions relevant or in need of attention. It is assumed that these respondents have limited interest in the topic. This may be explained by the fact that linguistic well-being has only recently begun to receive attention within the Latvian education system and that research on the issue remains limited.

An overview of the collected data is given in Table 1.

To explore teachers' professional needs related to working in ethnically and linguistically diverse classes and promoting the linguistic well-being of students in practice, a panel discussion was organised. It involved 57 pre-school and 52 primary school teachers (109 participants in total), who were invited to freely express their most pressing professional needs. The responses were analysed by frequency, and only those reflecting a new or distinct aspect were isolated and ranked.

Among all the professional needs identified by teachers, greater family support emerged as the leading concern (reported in 72.4% of responses). Teachers believe that families play a crucial role in building a language-rich environment. This can happen in several ways – by providing opportunities to use the language at home and other immediate surroundings, by actively engaging in the learning process, by encouraging their children to learn the language, and, where possible, by arranging additional support such as private tutoring. Additionally, teachers noted that many parents place sole responsibility for language acquisition on pre-schools and schools, without recognising that effective language learning requires more than formal education – particularly given the large number of children in each class or group, where individual support for every child is difficult to provide. At the same time, teachers also believe that targeted activities with the family are important. There is a lack of ideas for this work. Often they are only episodic. According to teacher surveys, on average, 80% of students with a minority language background primarily use Latvian only during lessons, while during breaks and in their free time outside school communication typically takes place in the language of

their minority group. Moreover, Latvian-speaking peers often do not support the use of Latvian in these peer interactions, and since they generally do not speak Russian or other minority languages, English is often used as a common means of communication. To support students from minority language backgrounds in acquiring educational content across different subjects in Latvian, the professionalism of teachers is crucial. This entails understanding needs of students and planning for both language acquisition and its integration into the educational process, especially in contexts where language proficiency, speech development, emotional experiences, and social backgrounds vary.

In addition to learning-related challenges, teachers also face social, psychological, and emotional issues that require attention. Respondents indicated that they themselves often need support to maintain their own psychological and emotional well-being. Without such support, teachers may experience burnout, reducing their capacity to ensure both overall and linguistic well-being for their students.

The second most frequently mentioned professional need (reported by 62.1% of respondents) was the availability of teaching and methodological tools for pre-school and primary school levels. Teachers highlighted the need for materials that integrate subject content with vocabulary and grammatical forms across disciplines. Such integration supports more sustainable learning, increases student confidence in their knowledge and skills, and encourages safer, more fluent language use.

The need for a wider variety of games, as well as descriptions of research and project-based tasks that can be used across subject areas was also expressed. These activities would allow students to experience more positive emotions and moments of spontaneous engagement – including humour – while working in pairs or groups and using language to learn content.

Additionally, teachers emphasised the importance of arranging the physical classroom or group environment in a way that allows to plan and organise their work in diverse ways. This often requires specific equipment, visual aids, and supplementary books or materials. They noted that varying organisational forms and teaching methods significantly affects student motivation to learn. For example, outdoor games and exploratory activities in the surrounding environment can encourage students to use the language of instruction and reduce their fear of making mistakes.

Another important area, mentioned by 54.3% of respondents, was the methodology for assessing and self-assessing learning outcomes. Teachers stressed that the objectivity of assessment plays a critical role in both overall and linguistic well-being of students. They pointed out that traditional evaluation practices – where performance is judged primarily by the number of mistakes – remain a challenge. Frequent correction of misused words or forms can discourage students from speaking or writing, particularly if they are still developing their language proficiency. Yet it is widely recognised that making mistakes is a natural and necessary part of language learning. To encourage students to speak without fear of making mistakes, timely and supportive teacher feedback is essential – it forms the foundation for successful language development.

An overview of teachers' professional needs for successful pedagogical process that supports linguistic well-being of students is summarised in Table 2.

Table 2 Professional needs of teachers for supporting linguistic well-being of students in the educational process

Professional needs reported by teachers	Share and count of responses	
	%	<i>n</i>
Targeted activities in partnership with the family	72.4	79
Additional teaching materials and methodologies; suitable and diverse learning environment	62.1	68
Improved methods for evaluating and self-assessing learning achievements	54.3	59

The data obtained in the empirical study confirm the complex nature of linguistic well-being, which is rooted in a respectful attitude towards the student, regardless of their health status or level of language proficiency. Since linguistic well-being is also shaped by a student's character and by both external and internal motivation to participate in the educational process including speaking, responding, asking questions, and seeking clarification. Teachers must be able to identify ways to support each student's engagement in learning. This includes selecting appropriate methods to promote both subject-specific learning and language development in a mutually reinforcing way.

Discussion

Linguistic well-being is a psycho-emotional state in which an individual:

- feels comfortable in general and with themselves when using language – is confident in their ability to communicate, express thoughts and beliefs, and achieve other communicative purposes;
- is able to perceive the cultural context embedded in a particular language;
- can use appropriate speech behaviour that aligns with verbal and non-verbal norms, cultural expectations, and established patterns of interaction, including speech etiquette – the social rules of language use that guide communication and help affirm one's identity within a specific social environment;
- can acquire knowledge in a particular field through language, and understand, formulate, and demonstrate it as needed (Nanquil, 2021; Martena, 2021; Anspoka, 2016; Fanany, 2018).

This means that linguistic well-being is not only a linguistic, psychological, and pedagogical construct, but also a socio-emotional and cultural one. It cannot be achieved by focusing solely on a language proficiency or the use of appropriate language tools in the educational process. Linguistic well-being must be considered in relation to a broader set of components.

First, linguistic well-being is influenced by overall physical and mental harmony, emotional state, and cognitive abilities. Second, it is shaped by the motivation to learn and attitude towards the language of instruction. Linguistic well-being is more likely

to develop in a stable and sustained way when a student has stable physical, mental, social, and emotional well-being, maintains a positive attitude toward their environment – including the language of instruction – and has opportunities for recognition and affirmation (Svence, 2020; Nanquil, 2021; Seligman, 2011).

One of the most significant obstacles to linguistic well-being is language anxiety, which is characterised by feelings of unease, vague fear, and agitation (Nanquil, 2021; Martena, 2021). Anxiety of this kind hinders the ability to engage fully in learning activities, especially when oral performance is required in front of others.

Anxiety may be triggered by several factors. These include interpersonal dynamics within the group or class that make the student feel physically or emotionally excluded, or a mismatch between the content or methodology of instruction and the level of language proficiency. In particular, anxiety can be intensified by educational materials that exceed the linguistic level appropriate for the learner, by disproportionate expectations from the family regarding learning outcomes, as well as by psychological conditions and physiological responses to stressful situations.

In such a state, learners are often unable to regulate their thoughts, behaviours, and emotions sufficiently to engage purposefully in learning. When self-regulation is well developed, students may find ways to learn and reach their goals independently. However, when self-regulation is limited – as is often the case in pre-school and primary school – support from adults, particularly teachers, becomes essential.

In recent years, the psychological aspects of language learning – alongside other key educational concerns – have received increasing attention. These include the learner's emotional state, motivation to learn or use the language, self-confidence, ability to regulate emotions and manage stress, the emotional climate within the group or class, support from teachers and others, and national and societal attitudes toward language and education (Martena, 2021).

Linguistic well-being is also enhanced by the academic achievements of students and an objective assessment of their performance (Marsh et al., 2020; Seligman, 2011). It is important that students do not feel different from their peers, and that language does not become a barrier to mutual communication.

When a group or class includes both native Latvian speakers – who have used the language at home or in other natural-language environments since birth – and students from minority language backgrounds, linguistic anxiety may arise. A minority language student may know an answer or idea in their mother tongue but choose not to express it in Latvian, either because they are unable to do so or fear making mistakes, thus avoiding a potentially uncomfortable situation.

While native speakers have typically developed so-called *internal grammar*, minority students often need explicit support in learning pronunciation, word formation, grammatical agreement, and correct use of common expressions in Latvian. However, such support must be provided in a way that avoids causing discomfort or embarrassment (Anspoka, et al., 2023).

It is therefore important to strengthen the relationship between content and language, as students with a minority language background benefit most from a consciously planned and integrated approach to language learning and language use (Martena, 2021).

Active, non-compulsory engagement is essential for school students. For this reason, games and playful activities are especially relevant at pre-school and primary school stages. During play, children dialogues tend to be longer and more elaborate, and their interest is sustained by the roles they assume, the storylines they follow, and the materials they use (e.g., toys) (Stangaine, 2014).

In addition to written texts from books or other sources, multimodal texts play an important role. These allow learners to engage with not only verbal content but also images, audio, video, digital tools, interactive features, and animation. As a result, the learning process becomes more varied and more easily adapted to the needs of language learners, while also fostering a sense of security. Working with a combination of texts, images, sound, movement, and digital tools can facilitate comprehension and increase active participation in the learning process.

When giving instructions, asking questions, or providing explanations, teachers' language and speech should be intentional and well-structured. Language anxiety can be reduced when teachers prioritise the development of linguistic flexibility and fluency, rather than focusing solely on grammatical accuracy or subject content (Martena, 2021).

Teachers, who are familiar with the principles of inclusive education and their practical application are generally more successful in building emotional connections, fostering a positive environment in the class, and identifying or preventing student anxiety (Nīmante, 2021). In the educational process, it is essential to build and maintain an environment where students not only acquire knowledge and skills but also develop their intellectual capacities, build confidence in their personal strengths, and form a sense of values (Svence, 2020).

Additionally, support from teachers, effective cooperation with parents and school support staff, and student belief that their mother tongue and cultural background are respected are equally important.

Conclusions

- Pre-primary and primary school teachers involved in the study described linguistic well-being as a positive internal state – a sense of satisfaction or comfort in situations where the individual perceives information, feels they understand it, or can speak, read, or write freely as needed. 97.5% of teachers consider well-being as a vital role for individual's quality of life and for learning/teaching goals.
- At the same time, 67.8% of respondents say that it is very difficult to think about the linguistic well-being of each student in the teaching process, as there are many other tasks to be tackled in lessons. There are also respondents who say that linguistic well-being is under-researched in Latvia and teachers lack the necessary experience.

- Among the most important professional needs of teachers, they stress the importance of targeted activities in partnership with the family, additional teaching materials and methodologies; suitable and diverse learning environment and methods for evaluating and self-assessing learning achievements.
- Overall, the study confirms that promoting linguistic well-being requires a systemic approach. This involves not only improving professional competences of teachers and providing them with appropriate resources (such as teaching materials and methodologies) but also strengthening cooperation with families and ensuring a supportive and emotionally safe school environment.

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INTERVENTION OF CLIL APPROACH ON ACADEMIC LANGUAGE DEVELOPMENT IN SCIENCE AND MATHEMATICS

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ABSTRACT

Content and Language Integrated Learning (CLIL) is an instructional approach that simultaneously develops subject knowledge and language skills. In India, several government exams mandate the clearance of English and Hindi language papers as a compulsory component. Schools and Universities mainly focus on concept attainment rather than enhancing students' vocabulary or language proficiency, leading students to rely on rote memorization of scientific and mathematical terms. To mitigate this gap, an effort was made to introduce the CLIL approach towards instructing Science and Mathematics in both the target languages. This study aimed to bridge this gap by fostering collaboration between language and subject teachers to customize content integrating language development into Science and Mathematics instruction with a focus on the 4C's of CLIL pedagogy; content, communication, cognition and culture. The study involved a sample of 40 prospective teachers from the Department of Education, Chitkara University, Punjab, India, divided into an experimental group (20 participants receiving CLIL-based instruction) and a control group (20 participants receiving traditional instruction). The study adopted mixed-method approach. Quantitative analysis was carried out by employing t-test and Pearson's Correlation. The post-test scores of both groups revealed that experimental group (Science; Mean = 11.650 and Maths; Mean = 17.3) was doing better than the control group (Science; Mean = 9.950 and Maths; Mean = 13.8) in both disciplines but there was no significant relationship between the achievement of scores in Science and Mathematics. Qualitative data from interviews and classroom observations underwent thematic analysis which revealed the positive attitude of students and teachers towards CLIL pedagogy. However, they reported challenges like teacher expertise and training, balancing content and language instruction, resource availability and accessibility, time constraints and workload in its implementation.

Keywords: *Academic Language Development, CLIL, Science and Mathematics Education, Student Achievement, Teacher Collaboration*

Introduction

As global demands change, education must adapt. Developing effective teaching methods that integrate language learning with meaningful content is key to this shift. Content and Language Integrated Learning (CLIL) is a widely recognized pedagogy that enhances exposure to the target language while teaching subject content (Council of Europe, 2019). In the past decade, both European and non-European educational policies have increasingly emphasized the importance of learning a second language. As English is the global language of science and technology, it has become central to bilingual education policies, with CLIL being a key pedagogical model (Ruiz-Cecilia et al., 2023). CLIL supports multilingualism, particularly by integrating various vehicular and vernacular languages. One of the key conceptual models in CLIL was proposed by Coyle (2005). His model includes four components: 1) content (topics taught in a second language); 2) communication (verbal, non-verbal, and multimodal interactions); 3) culture (the role of cultural context in learning), and iv) cognition (enhancing higher-order thinking through problem-solving). Over the past two decades, the growing recognition of the benefits of teaching content in a second language (L2) has led to widespread adoption of this approach, which enhances both subject knowledge and L2 proficiency (Dalton-Puffer, 2007; Surmont et al., 2016). Wolff (2005) highlights CLIL's role in developing reading skills, not only for comprehension but also for presenting content and supporting other language abilities. As a result, many education systems globally have adopted CLIL to teach foreign languages and promote multilingualism (Luanganggoon, 2020; Keeratisuntorn & Sukavatee, 2023). In conclusion, CLIL is a recognized approach that integrates subject-matter instruction with second language learning. With English as the global language of science and technology, CLIL has become central to bilingual education policies worldwide. This paper explores the effectiveness of CLIL in promoting higher-order thinking and multilingualism in Science and Mathematics education.

Literature Review

CLIL, especially when combined with technology and interactive methods like debates, improves comprehension, participation and language learning (Coyle et al., 2010). As a multilingual and intercultural approach, it is ideal for diverse classrooms, promoting inclusion, motivation and key competencies (Schietroma, 2019). Its flexibility makes it effective in addressing challenges in multicultural education (Coyle, 2007). CLIL is a growing force in multilingual and intercultural education, promoting critical thinking through deeper cognitive engagement (Cinganotto, 2023). While CLIL positively impacts language acquisition and subject understanding, its successful implementation faces challenges, including the need for more teacher support and clear learning goals (Asdarina et al., 2024). Successful CLIL implementation requires strategies that focus on teacher support and clear, student-centred objectives. CLIL boosts both intrinsic motivations, like enjoyment and extrinsic motivation, such as increased self-confidence and lower anxiety

(Martí et al., 2022; Roth et al. (2022) found modular CLIL teaching helps low-achieving students, though the dual challenge of content and language can cause exhaustion. Macaraeg et al. (2024) emphasizes the need for targeted vocabulary development and teacher training. Ruiz-Cecilia et al. (2023) found mixed results in Mathematics, while Tagnin et al. (2020) noted practical limitations in teaching CLIL in Math. Surmont et al. (2016) show that CLIL improves Math performance, while Tagnin and Riordain (2021) warn that oversimplifying language can reduce the depth of the subject. Coellar (2021) suggests that scaffolding, code-switching, and multilingual resources enhance both language and content learning. CLIL also boosts reading skills by providing subject-specific L2 vocabulary, improving comprehension (Hartiala, 2000). CLIL is a valuable multilingual and intercultural approach that promotes inclusion, motivation and key competencies. However, its limitations include the need for more teacher support, unclear learning goals, mental exhaustion, vocabulary challenges and the risk of oversimplification.

Need and Significance of the Study

In European schools, subjects are often taught in a second language (L2), aligning with the European Commission's White Paper (1995), which encourages learning topics in a first foreign language to promote multilingualism and cultural awareness. In India, English and Hindi proficiency is required for various government exams, yet students from private (English-medium) and government (Hindi-medium) schools often struggle due to limited academic exposure to both languages. To bridge this gap, this study introduced the CLIL approach for teaching Science and Mathematics in both English and Hindi. The paper examines the bilingual benefits of CLIL in improving language skills and subject understanding, while also exploring the attitudes of teachers and students towards CLIL implementation.

Theoretical Background of CLIL

Several key educational and linguistic theories support the foundation of Content and Language Integrated Learning (CLIL). Krashen's (1982) theory of implicit language acquisition highlights subconscious learning through meaningful content. Vygotsky (1978) stresses the role of social interaction and scaffolding, while Piaget's (1963) constructivist theory sees learning as building on prior knowledge. Cummins (1981) adds that language can be developed in both academic and social settings. Together, these theories support CLIL's dual-focus approach, emphasizing meaningful content, social learning and regional language context.

Objectives

1. To study the improvement in both content knowledge and language proficiency with the CLIL pedagogy intervention in science instruction.

2. To study the improvement in both content knowledge and language proficiency with the CLIL pedagogy intervention in mathematics instruction.
3. To study the relationship between mathematics and science scores under the traditional teaching method.
4. To study the relationship between mathematics and science scores under the CLIL pedagogy intervention.

Hypotheses

- Ho1 There is no statistically significant improvement in both content knowledge and language proficiency with the CLIL pedagogy intervention in science instruction.
- Ho2 There is no statistically significant improvement in both content knowledge and language proficiency with the CLIL pedagogy intervention in mathematics instruction.
- Ho3 There is no statistically significant relationship between mathematics and science scores under the traditional teaching method.
- Ho4 There is no statistically significant relationship between mathematics and science scores under the CLIL pedagogy intervention.

Methodology

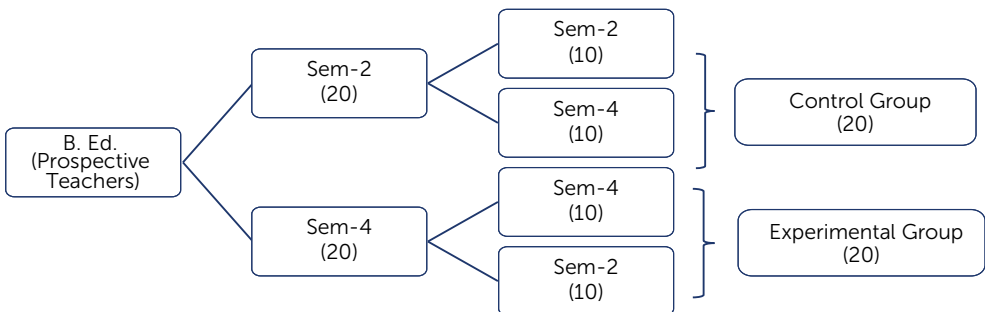
Research Design

The study followed quasi-experimental Pre and Post-test Design.

Time Duration: One Week				
Random Sampling	Control Group	Pre-test	Traditional Teaching Method	Post-test
Random Sampling	Experimental Group	Pre-test	CLIL Intervention	Post-test

Sample

The sample of the study included 40 prospective teachers of semester 2 and 4 of B. Ed. Course from the Department of Education, Chitkara University. Random sampling was done to create two groups, each consisting of 20 members, with an equal distribution from Semester 2 (10) and Semester 4 (10) in both the control and experimental groups.



Data Collection Methods

The study followed a mixed-methods approach. Prospective teacher's language proficiency and content knowledge was measured through a content specific teacher made test for quantitative analysis and survey of attitude of teachers towards CLIL pedagogy was done through interview, classroom observations and a questionnaire. Ethical approval was obtained prior to data collection and participation was voluntary with informed consent from all prospective teachers. Anonymity and confidentiality of participants' data were strictly maintained throughout the study.

Data Analysis

Quantitative data was analyzed using t-tests to measure score differences in Science and Mathematics between the control and experimental groups. Pearson Product Moment Correlation tested the relationship between achievements in both subjects. Qualitative data from interviews, observations, and surveys explored prospective teachers' attitudes towards the CLIL pedagogy. The qualitative data from semi-structured interviews was analyzed by reducing categories and clustering similar concepts into themes.

The CLIL Process

The sample was divided into two groups: the control group received traditional teaching (primarily teacher-centred lecture method), while the experimental group was taught using the CLIL pedagogy for Mathematics and Science. The CLIL content was developed by the Science, Mathematics, and Language teachers. The study lasted one week, with two periods daily for science and mathematics. Post-tests assessing content knowledge and language proficiency in Target languages (TL), English and Hindi were administered to both groups on the last day to measure learning outcomes.

The CLIL Process for Mathematics

The mathematics instructor took the concept of Complementary and Supplementary Angles from the text book prescribed for grade VI in Indian schools by National Council for Educational Research and Training (NCERT). The content was delivered for 5 days followed by post-test on the 6th day.

Day 1

The instructor of mathematics began the intervention with the basic concept of a line, a line segment and a ray.

Introducing Mathematical Concept-1 (a line)

'A line is a straight path that extends infinitely in both directions.'

Explanation in TL (English)

Then she explained the meaning of infinite (something that has no limits or end) English language. For example – The universe is believed to be infinite, stretching beyond what the human mind can comprehend.

Explanation in TL (Hindi)

Thereafter, the teacher made them understand the meaning of infinite (“अनंत”) in Hindi language. उदाहरण के लिए – ‘आसमान में अनंत तारे हैं।’

Introducing Mathematical Concept-2 (a line segment)

Next, the instructor gave the concept of a line segment and explains the meaning of segment both in English and Hindi. ‘A line segment is a part of a line that has two end points.’ For example, point A and point B. (using blackboard)

Explanation in TL (English)

Teacher explains the meaning of ‘segment’ using some examples – ‘A segment is a part of a whole, usually with defined boundaries.

Explanation in TL (Hindi)

गणति में ‘रेखाखंड’ (Line Segment) दो बिंदुओं (points) के बीच की सीधी रेखा होती है। उदाहरण के लिए- बिंदु A और बिंदु B। Segment का अर्थ है ‘खंड’। उदाहरण के लिए – ‘एक रेखा खींचने पर, उसका एक छोटा सा हिस्सा रेखा खंड कहलाता है।’

Introducing Mathematical Concept-3 (a Ray)

‘A ray is a line that starts at a single point and extends infinitely in one direction.’ (using blackboard). The meaning of word ‘infinite’ is repeated as in case of the concept on – a line.

Day 2

The mathematics instructor introduced the concept complementary angles along with synonyms (in English) and पर्यायवाची शब्द (in Hindi).

Introducing Mathematical Concept-4 (complementary angles)

The mathematics instructor introduced complementary angles using a visual teaching aid and explained, ‘Two angles are complementary if the sum of the angles is equal to 90°.’ For example, a 30° angle and a 60° angle are complementary because their sum is 90°

Explanation in TL (English)

She further explained students the difference between the commonly used word ‘complimentary’ and ‘complementary’. ‘Complementary’ means two things that complete or enhance each other when combined as in case of angles whereas ‘Complimentary’ means expressing praise or admiration.

Explanation in TL (Hindi)

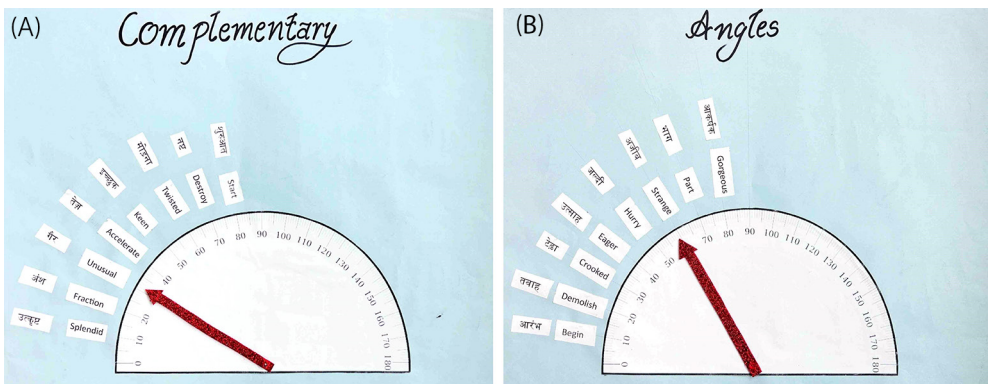
She explained the same concept in Hindi language with emphasis on the meaning of the word ‘complementary’. ‘complementary’ or ‘पूरक’ का मतलब है दो ऐसी चीजें जो एक-दूसरे को पूरा करती हैं या मलिकर एक-दूसरे को बढ़ाती हैं। Complimentary का मतलब है – एक प्रशंसात्मक टिप्पणी

She then asked students to call out some complimentary words and introduced the synonyms (English) and पर्यायवाची शब्द (Hindi). She explained that these are used to avoid repetition of the same words in a text. This was followed by an interactive activity on Day 3.

Day 3

Activity on complementary angles (Math) synonyms (English) and पर्यायवाची शब्द (Hindi)

The mathematics instructor displayed two chart papers on the blackboard with pictures of protractors (A and B) pasted on them. First chart contained English and a Hindi word written on each angle of the protractor ranging from 0° to 90° and second chart paper had synonym/ पर्यायवाची शब्द word written on their complementary angles. The activity was carried out in three steps. In the first step, participants were called near the display board one by one and were asked to choose any one angle from protractor-A and identify its complementary angle on the another. In the second step, they were asked to read the word written on the selected angle on protractor-A and then read aloud the synonym written on its complementary angle on protector-B. The same procedure was repeated for पर्यायवाची शब्द (Hindi), thereby giving them enough drill and practice in vocabulary of both the target languages.



Picture 1 Activity on Complementary Angles

Day 4

The mathematics instructor introduced the concept of conjunctions (English) and संयोजक शब्दों (Hindi) along with the teaching of supplementary angles.

Introducing Mathematical Concept-5 (supplementary angles)

The mathematics instructor introduced supplementary angles using a visual teaching aid. 'Supplementary angles are those angles that sum up to 180 degrees.' For example – A 50° angle and a 130° angle are supplementary because their sum is 180°

Explanation in TL (English)

She further explained students literal meaning of the word 'supplementary'. 'Supplementary' refers to extra or additional resources, information, or items that help improve

the main content just like how conjunctions in English work by connecting words, phrases or clauses to make sentences complete and more meaningful.

Explanation in TL (Hindi)

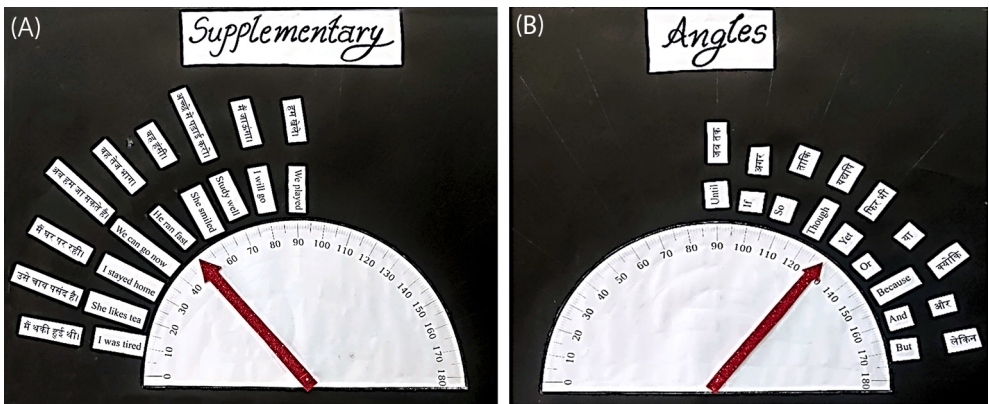
She explained the same concept in Hindi language with emphasis on the meaning of the word ‘supplementary’. Supplementary or ‘अतिरिक्त’ का मतलब होता है ज्यादा, अधिक या बचाकर रखा गया जो मुख्य चीज को बेहतर या पूरा करने में मदद करती है, जैसे – हिंदी में संयोजक शब्द वाक्य को जोड़कर उसे अधिक स्पष्ट और सार्थक बनाते हैं।

She then introduced the conjunctions (English) and संयोजक शब्द (Hindi). She explained that these are words that connect words, phrases or clauses in a sentence to make it syntactically correct. This was followed by an interactive activity on Day 5.

Day 5

Activity on supplementary angles (Math) conjunctions (English) and संयोजक शब्द (Hindi)

The mathematics instructor displayed two chart papers on the blackboard with pictures of protractors pasted on them. First chart contained English and Hindi phrases written on each angle of the protractor ranging from 0° to 90° and second chart paper had conjunctions/ संयोजक शब्द written on their supplementary angles ranging from 100° to 180°. The activity was carried out in three steps. In the first step, participants were called near the display board one by one and were asked to choose any one angle from protractor-A and identify its supplementary angle on the another. In the second step, they were asked to read the phrase written on the selected angle on protractor-A and then read aloud the conjunction written on its supplementary angle on protractor-B. The same procedure was repeated for संयोजक शब्द (Hindi), thereby giving them enough drill and practice in sentence formation in both the target languages.



Picture 2 Activity on Supplementary Angles

Day 6 The post-test was administered.

The CLIL Process for Science

The science instructor took the concept of three food groups for grade VI. Day 1 was spent in the discussions about energy giving or ऊर्जा देने वाला भोजन (Hindi) and food items that belong to this group drilling both in English and Hindi language, followed by body building food or शरीर निर्माण भोजन (Hindi) on Day 2, and protective food or सुरक्षात्मक भोजन (Hindi) on Day 3. On day 4, she connected the science concept with Indian culture by discussing staple food found in its different states. Day 5 observed an activity wherein participants revised the terms introduces in both target languages using a tabular representation. A post-test was conducted to test the learning outcome both in content knowledge and language proficiency on Day 6.

Picture 3 Content on Food Groups in target languages

TL: English	TL: Hindi	TL: English	TL: Hindi	TL: English	TL: Hindi
Energy giving	ऊर्जा देने वाला भोजन	Body building	शरीर निर्माण भोजन	Protective Food	सुरक्षात्मक भोजन
Sugar	चीनी	Pulses	दाल	Fruits and Vegetables	फल और सब्जियाँ
Wheat	गेहूँ	(gram, peas)	(चना, मटर)	Carrots	गाजर
Butter	मक्खन	Eggs	अंडे	Strawberries	स्ट्रॉबेरी
Oil	तेल	Milk	दूध	Grapes	अंगूर
Rice	चावल	Fish	मछली	Oranges	संतरै
				Almonds	बादाम
				Walnut	अखरोट
Cultural importance					
Major states:	Uttar Pradesh	West Bengal	Rajasthan		
मुख्य राज्य:	उत्तर प्रदेश	पश्चिम बंगाल	राजस्थान		
Staple food crop	wheat	rice and fish	pearl millet		
प्रमुख भोजन	गेहूँ	चावल और मछली	बाजरा		

Analysis of Data

Quantitative Analysis

Objective 1. To study the improvement in both content knowledge and language proficiency with the CLIL pedagogy intervention in science instruction.

H01. There is no statistically significant improvement in scores with the CLIL pedagogy intervention in science instruction.

The improvement in the prospective teacher's scores in both content knowledge and language proficiency with the CLIL pedagogy intervention in science instruction was analyzed for statistical significance. The *t*-test was conducted to compare the pre and post-test scores obtained in science by the control and experimental group.

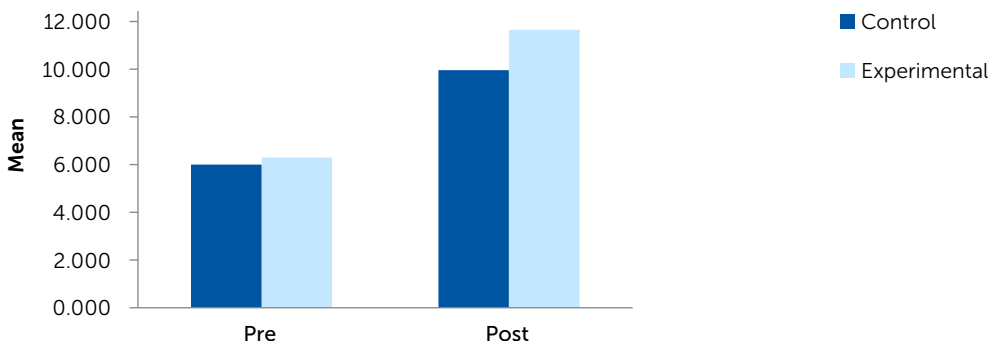


Figure 1 Graphical Representation of Difference between Pre and Post-test Scores of Control and Experimental Group in Science

Table 1 Difference between Pre and Post-test Scores of Control and Experimental Group in Science

	Group	N	Mean	Std. Deviation	t-value	df	p-value
Science-Pre	Control	20	6.000	1.777	.547	38	.587
	Experimental	20	6.300	1.689			
Science-Post	Control	20	9.950	2.139	2.912	38	.006**
	Experimental	20	11.650	1.496			

Pre-test Score Analysis

The results from Table 1 and Figure 1 indicate that the mean score for the control group ($M = 6.00$, $SD = 1.777$) is significantly lower than that of the experimental group ($M = 6.300$, $SD = 1.689$), with mean difference of $t(38) = 0.547$, $p = .587$. Since the p -value (0.587) is greater than the conventional level of significance (0.05), which suggests that there is no statistically significant difference between the control and experimental group before the intervention. It suggests that both groups had similar baseline performance.

Post-test Score Analysis

As shown in table1 and Figure 1, the results indicate that the mean score for the control group ($M = 9.95$, $SD = 2.139$) is significantly lower than that of the experimental group ($M = 11.65$, $SD = 1.496$), with mean difference of $t(38) = 2.912$, $p = .006$. Since the p -value (0.006) is less than the conventional level of significance (0.05), which suggests that there is a statistically significant difference between the two groups, indicating that the experimental group had a meaningful impact on science scores with CLIL intervention they had received for one week. Therefore, null hypothesis 1 is rejected.

Objective 2. To study the improvement in both content knowledge and language proficiency with the CLIL pedagogy intervention in mathematics instruction.

Ho2. There is no statistically significant improvement in scores with the CLIL pedagogy intervention in mathematics instruction.

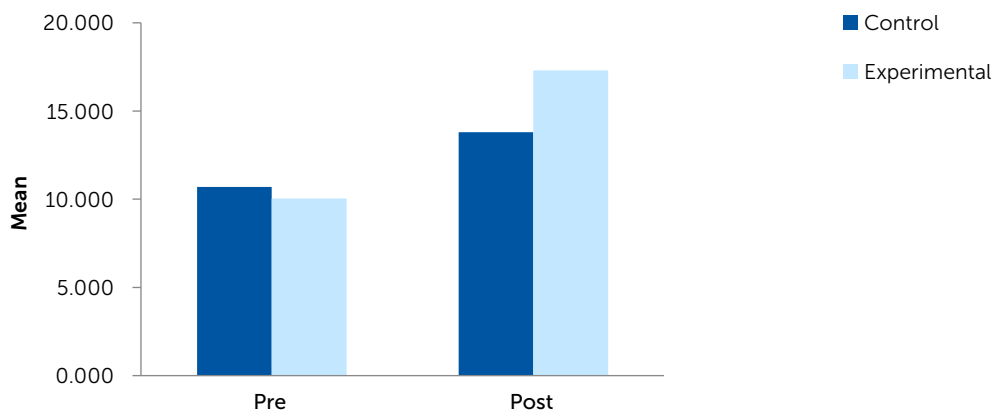


Figure 2 Graphical Representation of Difference between Pre and Post-test Scores of Control and Experimental Group in Mathematics

Table 2 Difference between Pre and Post-test Scores of Control and Experimental Group in Mathematics

Group		N	Mean	Std. Deviation	t-value	df	p-value
Mathematics-Pre	Control	20	10.700	3.358	.696	38	.490
	Experimental	20	10.050	2.481			
Mathematics-Post	Control	20	13.800	3.820	3.308	38	.002**
	Experimental	20	17.300	2.793			

The improvement in the prospective teacher's scores in both content knowledge and language proficiency with the CLIL pedagogy intervention in mathematics instruction was analyzed for statistical significance. The *t*-test was conducted to compare the pre and post-test scores obtained in mathematics by the control and experimental group.

Pre-test Score Analysis

The results from Table 2 and Figure 2 indicate that the mean score for the control group ($M = 10.700$, $SD = 3.358$) is significantly higher than that of the experimental group ($M = 10.050$, $SD = 2.481$), with mean difference of $t(38) = 0.696$, $p = .490$.

Since the *p*-value (0.490) is greater than the conventional level of significance (0.05), which suggests that there is no statistically significant difference between the control and experimental group before the intervention. It suggests that both groups had similar baseline performance.

Post-test Score Analysis

As shown in table 2 and Figure 2, the results indicate that the mean score for the control group ($M = 13.80$, $SD = 3.820$) was significantly lower than the mean score for the experimental group ($M = 17.30$, $SD = 2.793$), $t(38) = 3.308$, $p = .002$.

Since the p -value (0.002) is less than the conventional level of significance (0.05), the difference between the two groups is statistically significant, indicating that the experimental group had a meaningful impact on mathematics scores with CLIL intervention they had received for one week. Therefore, null hypothesis 2 is rejected.

Objective 3. To study the relationship between mathematics and science scores under the traditional teaching method.

Ho3. There is no statistically significant relationship between mathematics and science scores under the traditional teaching method.

The Pearson Product Moment Correlation test was conducted to statistically establish the relationship between mathematics and science scores of control group.

Table 3. Pearson Correlation Between Scores in Mathematics and Science for the Control Group

Group		Mathematics	Science
Control	Mathematics	Pearson Correlation	1
		p -value	.402
		N	20
	Science	Pearson Correlation	.198
		p -value	.402
		N	20

Table 3 shows the Pearson correlation coefficient between mathematics and science is 0.198. This indicates a weak positive correlation, suggesting that as scores in mathematics slightly increase, scores in science also tend to increase, but the relationship is not strong. The p -value for the correlation is 0.402, which is greater than the typical significance level of 0.05. This means the correlation is not statistically significant, implying we cannot confidently conclude that there is a meaningful relationship between mathematics and science scores in control group. Therefore, null hypothesis 3 is not rejected.

Objective 4. To study the relationship between mathematics and science scores under the CLIL pedagogy intervention.

Ho4. There is no statistically significant relationship between mathematics and science scores under the CLIL pedagogy intervention.

Table 4 shows the correlation between mathematics and science is 0.303. This indicates a weak to moderate positive relationship, meaning that as scores in mathematics increase, scores in the science also tend to increase, but the relationship is not strong. The p -value is 0.193, which is greater than the conventional significance level of 0.05. This suggests that the correlation is not statistically significant, implying we cannot confidently conclude that there is a meaningful relationship between mathematics and science scores in experimental group. Therefore, null hypothesis 4 is not rejected.

Table 4 Pearson Correlation Between Scores in Mathematics and Science for the Experimental Group

Group		Mathematics	Science	
Experimental	Mathematics	Pearson Correlation	1	.303
		<i>p</i> -value		.193
		<i>N</i>	20	20
	Science	Pearson Correlation	.303	1
		<i>p</i> -value	.193	
		<i>N</i>	20	20

Qualitative Analysis

The following results were obtained on the analysis of the survey questionnaire on the effectiveness of CLIL in enhancing Content and language Proficiency.

Table 5 Responses of Survey Questionnaire on the Attitude of Prospective Teachers Towards CLIL Intervention

S. No.	Items Along with the Percentage of Respondents Under Various Categories of Responses				
1	How familiar are you with CLIL-based teaching?				
	Very familiar	Somewhat familiar	Neutral	Not very familiar	Not at all familiar
	25%	35%	30%	10%	
2	Do you believe CLIL helped in better understanding of subject content?				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
	30%	65%	5%		
3	Do you think CLIL improved bilingual proficiency in Science and Mathematics?				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
	35%	60%	5%		
4	How did you feel learning Science/Math using both Hindi and English?				
	Very comfortable	Somewhat comfortable	Neutral	Uncomfortable	Very uncomfortable
	35%	55%	10%		
5	In your opinion, did CLIL make lessons more engaging?				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
	30%	60%	10%		
6	CLIL has improved your confidence in using subject-specific vocabulary in both Hindi and English?				
	Yes, significantly	Somewhat	No change	It has made it more difficult	
	40%	60%			

Effectiveness of CLIL in Enhancing Content and Language Proficiency

Table 5 indicates that only 25% of respondents were familiar with CLIL-based teaching, likely due to their exposure to the CLIL lab at Chitkara University. Despite this, 65% agreed that CLIL improved their understanding of subject content, and 60% of the experimental group acknowledged enhanced proficiency in both science and mathematics. Regarding bilingual instruction, 35% felt very comfortable and 55% felt comfortable using both Hindi and English. Most respondents found CLIL lessons engaging, with only 10% remaining neutral. In terms of vocabulary use, 60% reported some improvement in subject-specific terms, while 40% noted significant gains.

Feedback from Subject Teachers who delivered the CLIL-based instructions

Instructors faced several challenges in implementing CLIL pedagogy. The mathematics instructor struggled to balance language and content, while the science instructor noted a lack of resources and found preparation tedious. All teachers involved in designing CLIL lessons (Mathematics, Science, English, and Hindi) felt they needed more training. Additionally, students faced difficulties with dual-language learning.

Feedback on Teaching Mathematics and Science through CLIL Pedagogy

Thematic analysis of the interviews revealed that CLIL intervention positively impacted content knowledge, language acquisition, engagement, and collaboration. However, it also highlighted challenges faced by prospective teachers in its implementation and opportunities to enhance teaching in mathematics and science through CLIL pedagogy.

Table 6 describes the attitude of prospective teachers who were exposed to CLIL intervention (experimental group). They generally provided positive feedback on teaching Mathematics and Science through CLIL Pedagogy.

Table 6 Attitude of Prospective Teachers towards CLIL Intervention

Themes	Coding	Occurrences
A. Positive Feedback on Teaching Mathematics and Science through CLIL Pedagogy		
1. Enhanced Conceptual Understanding	<ul style="list-style-type: none"> Use of bilingual resources has made complex scientific and mathematical ideas more accessible 	8
2. Language Development and Bilingualism	<ul style="list-style-type: none"> Exposure to both English and Hindi terms have enriched vocabulary Using Hindi synonyms alongside English terms enhanced comprehension and encouraged smoother transitions between subjects. 	8
3. Engaging and Interactive Learning Environment	<ul style="list-style-type: none"> Encouraged active participation and engagement in classroom discussions. Creative teaching aids made lessons more stimulating and participatory. 	8

Themes	Coding	Occurrences
4. Cognitive and Critical Thinking Skills	<ul style="list-style-type: none"> The dual focus on content and language encouraged analytical skills. Students develop the ability to connect concepts across disciplines. 	5
5. Collaboration and Intercultural Competence	<ul style="list-style-type: none"> CLIL activities promoted collaborative learning. It developed a greater respect for multilingualism by engaging with both Hindi and English in academic contexts. 	5
6. Pedagogical Impact on Teaching Effectiveness	<ul style="list-style-type: none"> Teachers found it rewarding to see participants grasp both subject matter and language. The success of CLIL reaffirms its value in modern education. 	6
B. Challenges in Teaching Mathematics and Science through CLIL Pedagogy		
1. Student Engagement and Inclusivity	<ul style="list-style-type: none"> Some students struggled to participate fully Need for inclusive teaching strategies 	5
2. Language Acquisition and Vocabulary Development	<ul style="list-style-type: none"> Constraints of learning spaces affected language learning Additional language support needed for complex topics 	7
3. Teacher Expertise and Training	<ul style="list-style-type: none"> Subject matter experts needed to be proficient in both mathematics and the target language Need for rigorous planning and collaboration among teachers Teacher's training required 	7
4. Balancing Content and Language Instruction	<ul style="list-style-type: none"> Challenge in maintaining an equal focus on content delivery and language development Difficulty in preparing and assessing dual-focused resources 	8
5. Resource Availability and Accessibility	<ul style="list-style-type: none"> Non availability of sufficient well-designed materials to support CLIL teaching Lack of resources that effectively cater to both content and language objectives 	6
6. Time Constraints and Workload	<ul style="list-style-type: none"> CLIL lessons require extensive preparation, slowing syllabus completion Additional workload for teachers (copy checking, revision worksheets, curriculum management) Limited feasibility of using CLIL for all chapters 	5
C. Scope for Enhancing the Teaching of Mathematics and Science through CLIL Pedagogy		
1. Ensuring Lesson Continuity and Coordination	<ul style="list-style-type: none"> Maintained a seamless flow in lesson delivery Enhancing cohesion for a more engaging learning experience 	6
2. Increasing Classroom Interaction and Engagement	<ul style="list-style-type: none"> Encouraging more dialogue and participation Enhancing student collaboration for a more interactive environment 	8

Themes	Coding	Occurrences
3. Strengthening Teacher Proficiency and Training	<ul style="list-style-type: none"> Improving educators' proficiency in both content and language Providing continuous professional development Equipping teachers with skills to balance language and subject instruction 	6
4. Leveraging Technology for Enhanced Learning	<ul style="list-style-type: none"> Utilizing interactive digital resources and simulations Integrating language learning apps for additional scaffolding 	5
5. Incorporating Cultural Elements in CLIL Instruction	<ul style="list-style-type: none"> Connecting subject content with real-world cultural contexts Using cultural integration to deepen conceptual understanding 	7

Discussions

This study found confirmatory evidence that the CLIL intervention had a significant positive impact on students' learning in science and mathematics. For both subject areas, the experimental group had a greater mean score post-test than the control group, (Science- $M = 11.65$ and Maths- $M = 17.3$), which is consistent with previous research showing CLIL's potential to improve subject knowledge and language knowledge at the same time (Lasagabaster & Sierra, 2010; Pérez-Cañado, 2012). Similar improvements to academic attainment through CLIL have been documented in STEM (science, technology, engineering and maths) contexts (Dalton-Puffer, 2013), where including language objectives provides deeper conceptual understanding while maintaining learner engagement to build knowledge.

The enhancement of mathematics performance also supports previous evidence that CLIL has the ability to promote cognitive development through dual processing of content and language (Marsh, 2012). This dual focus can drive more active meaning making, logical reasoning and problem-solving methods (Coyle et al., 2010). In the present study, the performance of the experimental group contributes to these claims and reaffirms the CLIL benefits are not limited to linguistically heavy subjects, but also to more abstract and symbolic domains like mathematics.

The weak positive correlation in the control group between science and mathematics scores, which had no statistical significance, mimics the trends discussed in studies in which content areas are delimited and little interdisciplinary support takes place (Navés & Muñoz, 1999). By contrast, the weak to moderate correlation in the experimental group, again with no statistical significance could point towards cross subject support when utilizing CLIL strategies. CLIL has been shown to support transferable skills and integrative thinking across subjects (Sylvén & Värnum, 2015) but the data collected in the current study suggest that firmer evidence and claims would necessitate a larger sample and/or more weeks of intervention.

Information from both students and teachers in the present study corroborates previous findings that CLIL develops greater learner engagement, critical thinking and enculturation (Mehisto et al., 2008; Meyer, 2010). The evidence reported here supports the notion that CLIL provides for a more interactive classroom climate that supports collaboration and deeper modes of processing concepts. The challenges of balancing the content and language demands and the increased amount of preparation time are documented in previous studies (Costa & D'Angelo, 2011; Dafouz & Guerrini, 2009). The persistence of these challenges in the present study supports the need to provide professional development to teachers and possibly targeted investment in resources.

Overall, these findings support the academic literature endorsing CLIL as a viable approach to STEM education, and it also points to continued barriers to the wider sustainability of CLIL in STEM education. By also integrating language and content learning, CLIL seemingly addresses both the academic and linguistic goal in ways that could prepare students for the knowledge economy within globalization context.

Conclusion

This study demonstrates robust evidence for the positive impact of Content and Language Integrated Learning (CLIL) on student outcomes in science and mathematics. The substantial improvements outlined for the experimental group suggests that the combination of content and language aims leads to improved understanding of concepts, sustained interest, and cognitive development. The evidence suggests that CLIL enhances 21st-century skills, such as team collaboration, critical thinking and intercultural competence, suggesting a useful pedagogy to help students in a globalised world. Qualitative feedback shows that students value a more interactive and student-centred learning experience, while teachers valued modified strategies. There are challenges associated with this method of pedagogy, namely additional preparation time and a degree of professional learning to adequately balance both content and language instruction. If teacher development programs as well as positive policy change are used to support novice CLIL practitioners, it could become broadly used across STEM education.

In summary, given the ability of CLIL to promote language proficiency and content knowledge, we recommend it be put into practice more broadly in schools, particularly where bilingual or multilingual competence is a function of the curriculum.

Suggestions for the further Research

The study found a weak to moderate positive correlation between mathematics and science post-test scores, suggesting the need for further research with a larger sample. It also showed overall gains in post-test scores for both control and experimental groups, indicating potential for separate studies on content and language proficiency gains. Future research could explore CLIL implementation in subjects like history, civics and economics, as well as the use of Hindi, a widely spoken but less commonly written

language and the introduction of a third language, native or foreign for Grade VI students in Indian schools. A solution-oriented study addressing challenges faced by CLIL teachers would also be valuable. Additionally, long-term impact studies, investigations into effective teacher training models and the development of CLIL specific teaching materials are recommended.

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DEVELOPMENT OF A LITERATURE-BASED CURRICULUM FOR YEAR 11 ENGLISH AS A FOREIGN LANGUAGE STUDENTS IN LATVIA

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ABSTRACT

Since the implementation of the competence-based “Skola2030” reforms to the Latvian education system beginning in September of 2019, there has been an increased focus on reading authentic literature in secondary level foreign language classes. While the state-developed sample program of the “highest level” foreign language course intended for year 12 students is centred around the reading of an entire work of literature throughout the study year, no such framework has been developed for the “optimal level” course intended for year 10 and 11 students. Therefore, the goal of this research was to develop a literature-based curriculum for the optimal level “English I” course that satisfied all of the revised curriculum standards and adequately prepared students for the centralized exam at the course’s conclusion. Throughout the second semester of the 2023/2024 study year, material based on Jack London’s *Call of the Wild* was developed and piloted with a group of ten grade 11 students taking the English I course. Students completed three semi-structured questionnaires administered via Google Forms before, during, and after the material was used. The exam results of students were also analysed and compared with those of students who did not use the material. According to the feedback, students preferred reading the book and completing the accompanying tasks rather than doing traditional textbook tasks, reporting that they felt it prepared them well for the exam at the end of the course and developed their language skills. While the results are promising, the small sample size makes it difficult to conclude whether the material can meet the needs of students throughout the country. The piloted material is now freely available for teachers of Latvia to use in their own classrooms in order to be further approbated and developed.

Keywords: *American literature, authentic texts, English as a foreign language, exam preparation, secondary education, Use of literature in EFL*

Introduction

In September of 2019, major reforms as part of the “Skola2030” project began to be implemented in the Latvian education system, including with the foreign language

curriculum. While previously the secondary education level (grades 10–12) used one set of curriculum standards for all students, a three-tiered system was introduced, where each standard now has three levels of complexity: “general,” “optimal,” and “highest.” All students in general secondary education institutions are required to pass an exam in mathematics, Latvian language, and a first foreign language, typically English, at the optimal level; this typically takes place at the end of grade eleven following two years of study in the “English I” course at the CEFR B2 level. Students are also required to pass at least two “highest level” exams following a year of intensive studies in “advanced” courses, of which the CEFR C1-level “English II” course is an option offered by secondary schools throughout the country (Cabinet of Ministers, 2019).

While the sample program for the “English I” course is designed to align with traditional foreign language textbooks offered by educational publishers (Kursīte et al., 2020), the “English II” sample course requires students to read an entire book in English and then complete a number of intensive assignments including a reader’s journal, translation of fragments, a film review of the book’s screen adaptation, and a research project (Kursīte et al., 2021). The centring of the English II course around reading a full book is part of a broader trend towards integrating the reading of literature into foreign language curriculum. For example, a study of 93 university nursing students in an English as a Foreign Language (EFL) class found that they significantly preferred using a novel as the main text of their course rather than a traditional textbook and enjoyed the experience despite having difficulties with understanding some vocabulary (Tsai, 2012).

One controversial aspect of integrating reading into the foreign language classroom is the debate between extensive and intensive reading. Day (2011, p. 13) highlights some of the key differences between extensive and intensive reading, describing extensive reading as an overall more student-centred approach and intensive reading a more teacher-centred one (see Table 1). While there have been many benefits of reading extensively in the classroom noted in studies such as those by Belgar & Hunt (2014), whose students generally showed improvement in reading fluency the more they read extensively, and Ateek (2021), whose students showed evidence of both improved reading fluency and vocabulary knowledge, most traditional exam tasks are based on intensive reading. Extensive reading can also be very time consuming, and it is expensive to be able to ensure that there is enough appropriate-level reading material available for all students in a class. While Suk (2016) also found significant benefits to doing extensive reading with his students, his study employed a balanced approach in which 70% of reading time was devoted to intensive reading and 30% to extensive reading. The approach taken by the Latvian education reformers can be determined to be a mix of extensive reading, such as the use of journaling, and intensive reading, such as translation and analytical research tasks (Kursīte et al., 2021).

Table 1 Summary of Key Differences Between Extensive and Intensive Reading (Day, 2011, p.13)

Intensive reading	Extensive reading
100% understanding	Overall understanding
Limited reading	Read a lot
Difficult texts	Easy texts
Word-for-word reading	Fluent reading
Focus on grammar use and rules	No direct study of grammar
Many comprehension questions	No comprehension questions
Direct teaching of strategies	No direct teaching of strategies
Use of dictionaries	Ignoring of unknown words

A key aspect when selecting texts to use is whether to use “authentic texts,” which are defined by Simonsen (2019, p.245) as “artifacts – newspaper articles, songs, poems, movies, short stories, menus, websites, etc. – that represent language use by and for speakers (often native speakers) of the target language.” Shepin (2019) reported benefits from the use of authentic texts, including literature, with foreign language students at the beginner and intermediate levels, such as a deeper exploration of language topics as well as cultural and emotive elements. Albiladi (2018) found that the use of authentic texts improved students’ motivation and cultural awareness, concluding that they seem relevant to students. However, Belgar & Hunt (2014) found that students who extensively read with simplified texts rather than authentic texts had overall better outcomes in reading fluency, which aligns with Day’s (2011) advocacy for the use of simplified “graded readers” as best practice.

Overall, the reviewed literature indicates that extensive reading, either in combination with intensive reading or not, can provide significant benefits for students of foreign language in a number of contexts and at a range of levels. While there is debate over whether to use authentic or simplified texts when doing extensive reading, authentic books can improve student engagement and also provide other benefits such as cultural awareness.

While a comprehensive program involving the extensive and intensive reading of a book has been developed for the highest level English II course (Kursite et al., 2021), this has not yet been done at the optimal level English I level. Given the potential benefits of the extensive reading of an authentic book for students at a variety of levels, the present researcher considers it regrettable that has not been previously done, especially as more students take the optimal level English I course than the highest level English II course since a foreign language exam is required of all students only at the optimal level whereas there are other exam options at the highest level (Cabinet of Ministers, 2019). Therefore, the objective of this study was to develop and test an authentic literature-based EFL curriculum for grade 11 students at the optimal level.

Methods

Context and participants

This action research was carried out with a group of 10 EFL students in the eleventh grade at a secondary school in Latvia. Being a state school, the language of instruction for nearly all subjects is Latvian, but all instruction in English class is expected to take part in the target language. In grades 10 and 11, the students learn English at the “optimal” level according to the Latvian state curriculum, which aligns with CEFR B2 level. The students that took part in the study had three lessons a week in this course during the tenth and eleventh grades, and they took a centrally administered state exam at the end of the course.

The researcher began teaching the students in January of 2024 in their final semester of the course after their previous teacher, who had taught them for the first three semesters, was unable to continue for the final semester. The students finished the course in May of 2024, taking the “optimal level” English exam at the beginning of June. The class met once per week for three 40-minute lessons in a row each time.

Students were informed beforehand that the results of the questionnaires as well as their exam results would be used anonymously as part of this research, and they were given the option to opt out from providing data.

Research Design

Before the first meeting, a needs analysis survey consisting of eight questions was conducted using the Google Forms platform. The questions asked students how often outside of English class they used receptive English skills (reading and listening skills), how often they used productive skills (writing and speaking), what their perceived abilities were at each skill, which classroom activities they believed had been the most and least effective so far in English class, what topics they would like to cover during the semester, how often they read books in English, and whether there was anything else their new English teacher should know about them.

Based on the results of the analysis as well as the aforementioned literature, the researcher decided to base the course on the novel *Call of the Wild* by Jack London instead of using a traditional EFL textbook. *Call of the Wild* was selected due to its availability in the public domain, its relatively short length of just over 30,000 words, its challenging yet understandable syntax and lexis for a modern reader, and its engaging subject matter for students. There are also several screen adaptations that have been produced since 1923 which could be analysed after having read the book.

For each of the book’s seven chapters, the researcher developed tasks that were related to the book’s themes and language, attempting to cover all of the “optimal level” foreign language curriculum standards and designing tasks that were similar to those students would encounter on the final exam. Each chapter was covered in one or two weeks, with the entire book being finished before the end of the semester.

After the students completed the entire set of literature-based tasks and took the optimal level exam, they answered a second questionnaire using the Google Forms platform about how well they felt that the tasks prepared them for the exam. Furthermore, their centralized exam results were compared with those of the students in the school who did not use the novel-based materials as a control group.

Results

Needs analysis questionnaire

Nine of the ten students answered to the first questionnaire before the semester began, with one opting out from answering the questions. Although there were eight questions asked in total, the results of only three of the questions have been included in this paper, as not all of them were directly relevant to the design of the current study. First, students were asked to rate how often they spoke and wrote in English outside of class (see Table 2) and how often they read or listened to English outside of class (see Table 3).

While the results indicate that all respondents read and listened to English on an at least daily basis outside of class, the greater difference in terms of how often they used English productively (spoke or wrote) outside of class indicated a mixed-ability class. This was further indicated in the results of students' self-evaluation of their abilities in various skills and aspects of English (see Table 4), with students rating each on a Likert Scale: 1 (not at all strong), 2 (somewhat strong), 3 (fairly strong), 4 (strong), and 5 (very strong).

Table 2 Reported Frequency that Students Spoke or Wrote English Outside of Class on Average

Response	Number of students	Percent
Never or rarely	0	0
A few times a month	2	22.2%
A few times a week	1	11.1%
Approximately daily	4	44.4%
I use English almost as much as I use my native language	2	22.2%

Table 3 Reported Frequency that Students Read or Listened to (including watching) English Outside of Class on Average

Response	Number of students	Percent
Never or rarely	0	0
A few times a month	0	0%
A few times a week	0	0%
Approximately daily	3	33.3%
I use English almost as much as I use my native language	6	66.7%

Table 4 Student Self-Evaluation of Various Language Skills and Abilities

Skill or ability	Weighted mean	Standard deviation
Speaking alone (in a presentation or monologue)	3.11	0.994
Speaking in a conversation	3.66	0.816
Writing long texts	3.33	0.816
Writing short texts (messages, short answers, etc)	4.11	0.737
Reading non-fiction (news articles, etc)	3.44	0.956
Reading fiction (books, short stories, etc)	3.77	0.629
Listening to recordings (YouTube, Netflix, podcasts, etc)	4.22	0.916
Listening to live people	3.88	0.737
Grammar	2.88	1.100
Vocabulary	3.22	0.916
Pronunciation	4.55	0.497
Fluency (ability to talk continuously without stopping)	3.88	1.100

A weighted mean was then calculated for each of the skills by multiplying the frequency of each response by its weight, adding all the products together, and dividing the sum by the number of overall responses. Standard deviation was then calculated for each to compare the extent to which there was a range or reported abilities. According to the responses, the skills and aspects with the greatest standard deviations were grammar, fluency, and speaking alone, indicating that the group’s reported abilities for these skills had a wider range.

One more question which should be highlighted was “What kinds of books do you most enjoy to read?” Out of the eight people who responded (one did not answer), three answered that they rarely or never read books in English. The five who did answer with specific genres had a wide variety of tastes, mentioning mystery, motivational fiction, philosophy, self-help, biography, poetry, adventure, science, psychology, and fantasy genres.

Given that only half of the class indicated that they read books at all, the questionnaire indicated that integrating reading of a novel into class would indeed be a good use of time for the students. Furthermore, *Call of the Wild* seemed to be an appropriate choice for their tastes in literature, as it includes elements of adventure, science, philosophy, psychology, and fantasy. Since there was a relatively wide range of reported lexical abilities, each chapter that was printed out with activities had words that were highlighted with definitions provided as footnotes as a form of differentiated scaffolding – students could either glance down quickly for definitions to better understand the text without having to pause to use a dictionary, and more proficient students who recognized the words or wanted to practice understanding only from context could simply ignore the footnotes altogether. Footnotes also included information about locations mentioned in the book that would not be well-known to the students as well as notes about history that might

have been obvious to readers at the time of the book's publication but be obscure to modern readers.

Since students reported a relatively high level of confidence when it came to reading fiction compared to other skills and aspects, it was deemed important to integrate writing, listening, speaking, grammar, and vocabulary tasks into the material as well.

Post-exam questionnaire

Eight of the students who took part in the study responded to a follow-up questionnaire that was conducted after taking the exam (See Table 4). The goal of this questionnaire was to determine the extent to which students believed that the material prepared them for the optimal level exam. This time, a Likert Scale was used for responses as follows: 1 (not at all well), 2 (not very well), 3 (somewhat well), 4 (well), and 5 (very well). A weighted mean was then calculated using the same formula as was used with the first questionnaire.

Given that the tasks were primarily focused on analysing the novel as they read it, it is not surprising to find that they reported that the material best prepared them for the reading tasks on the exam. While students also found that the included writing and speaking tasks helped them prepare for the exam, the results regarding the exam's listening section indicate that more listening tasks should have been developed at the time. Overall, the students seem to have seen the value in the material for preparing them for most of the exam.

Students were also asked to rate the extent to which they agreed with several statements regarding the material, again using a Likert Scale: 1 (strongly disagree), 2 (disagree), 3 (partially agree), 4 (agree), and 5 (strongly agree). According to the results, the students agreed that the book was interesting to read, indicating that the choice of literature was appropriate (see Table 5). Furthermore, all respondents except for one agreed or strongly agreed that the book was of an appropriate level for grade 11 students in Latvia. All respondents at least partially agreed that their grammar and vocabulary abilities improved while reading the book, with seven out of eight indicating that they "strongly agreed" when it came to vocabulary. All students either agreed or strongly agreed that reading the book was a good use of time in class, and this was confirmed by all students either disagreeing or strongly disagreeing that they would have preferred doing traditional tasks from a textbook or only reading fragments from the text instead of the full novel.

Table 4 Student Self-Evaluation How Well the Material Prepared Them for Parts of the Optimal Level English Exam

Section of the Exam	Weighted mean
Reading	4.63
Listening	3.38
Writing	4.38
Speaking	4.13

Table 5 The Extent to which Students Reported Agreeing with Statements Regarding the Material

Statement	Weighted average
<i>Call of the Wild</i> was an interesting book to read	4.63
The difficulty level of the book was appropriate for grade 11 students in Latvia	4
I expanded my vocabulary while reading the book	4.75
I improved my grammar abilities while reading the book	4.13
Reading the book was a good use of time in class	4.75
I would have preferred doing traditional tasks from a textbook	1.13
I would have preferred using fragments from the book instead of reading the full text	1.5

Two open-ended questions were also asked to the students regarding their recommendations about the material. The first asked whether they would recommend that the material be used with other eleventh grade students, with all but one of the eight students responding affirmatively. Students that agreed that it should be used with others wrote that “the exam was pretty similar to what we did in class”; “it really opened a new spectrum of words for me and I understood a lot of English slang and words better”; “it’s [a book] that helps students understand the variety of vocabulary and writing styles and techniques in English”; it “busts your knowledge giving exclusive facts for speaking and writing tasks”; “it was well prepared and interesting”; “it is a great way to enhance one’s vocabulary and reading skills”; and “interesting read, lots of complicated vocabulary to learn.”

When asked what they might suggest for improvements about the material, five students responded. Three of them suggested devoting more class time to analysing and discussing the chapters together as a group, including the literary aspects, while one student suggested including a journaling aspect. While time was limited during the three lessons a week throughout the semester, these suggestions could certainly be implemented if a teacher had more time to devote to the material.

Analysis of exam results

After the exam results were finalized, the school’s administration provided data to the researcher. The maximum score for the exam is 100 points in total, with 25 points for each of the individual sections: reading, writing, listening, and speaking. In total, 72 students took the optimal level English exam at the school in 2024. The mean score of the ten students who were taught using the materials (the experiment group) was calculated and determined to be 76.4, whereas the mean score for the 62 students who were not taught using the material (the control group) was calculated and determined to be 78.21.

However, the results of the experiment group were significantly skewed by one student who had recently arrived in the class from a different country and had only previously

studied English at the A1 level. With a mean of 77.96 and a standard deviation of 14.84 for the entire data set of 72 students, this student's result of 28 is 3.7 standard deviations away from the mean which means that it can be considered an outlier, especially given the circumstances. If the outlier student's result is removed, the mean score would be 82. While this is higher than mean score of the control group, the p-value of the two data sets is 0.469 which indicates that there is not a statistically significant difference between the results of the exam and the control group.

Discussion and conclusions

While no major conclusions can be drawn from the results of this study given its very limited scope and the lack of statistical significance of the data, there is reason to be encouraged about the potential for more integration of literature into the EFL classroom, particularly at the optimal level, and the potential benefits that it might provide to students mentioned by Day (2011), Belgar & Hunt (2014), Shepin (2019), Suk (2016), and Ateek (2021). The results of the questionnaire seem to confirm that students do indeed see the benefits of reading literature in EFL classrooms and are willing to do so, finding it more engaging than a traditional textbook-based curriculum. While nothing can be fully ascertained from the exam results of the students who used the material, at the very least their scores were not worse than the ones who did not use the material.

The present researcher has made freely available the material that was created as part of this project for teachers throughout Latvia to use in hopes that they can continue to give feedback that can be used to further develop the material, including refining the already existing tasks and providing ideas for new tasks. The researcher hopes that more teachers will continue to consider the use of literature to be integrated into the EFL classroom, and that more material will continue to be developed and provided to teachers for this purpose.

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DIGITAL TOOLS FOR ENSURING PREVENTIVE LEARNING DISCIPLINE

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ABSTRACT

Preventive classroom discipline is essential for maintaining a structured and positive learning environment, yet teachers often lack specific guidance on how digital tools can best support different elements of classroom management.

While the general benefits of educational technologies have been widely discussed, less attention has been given to identifying which tools are most effective for particular preventive functions, such as attention regulation, routine building, or positive reinforcement.

This study examines how selected digital tools contribute to various aspects of preventive discipline in Latvian classrooms. The aim was to determine the suitability of specific tools for supporting different classroom management goals, based on teacher feedback and tool functionality. The research involved 304 teachers from general education schools in Latvia who completed a structured questionnaire. Additionally, twelve digital tools commonly used in schools were evaluated according to criteria derived from preventive discipline theory, including usability, accessibility, and pedagogical alignment.

The results show clear variation in how tools serve specific classroom functions. ClassDojo and Google Classroom were considered especially effective for monitoring behaviour and communicating expectations.

Tools like Classroomscreen and Mentimeter excelled in attention management and routine support, while Kahoot and Quizizz were highly rated for maintaining student motivation and positive engagement.

A comparative analysis revealed that tools integrating visual structure and feedback systems were most consistently associated with successful discipline outcomes.

These findings provide practical guidance for educators seeking targeted digital solutions to support discipline. They also highlight the importance of selecting tools not only for instructional value but for their specific potential to prevent behavioural disruptions.

Keywords: *classroom management, digital tools, Latvia, pedagogical usability, preventive discipline, student behaviour, tool analysis*

Introduction

Preventive discipline is widely recognised as a foundational element of effective classroom management and school discipline. A growing body of literature (for example, Shean & Mander, 2020; AERO, 2023) show that a psychologically safe and predictable classroom environment is essential for reducing disruptive behaviour. Kirby and colleagues (2023) emphasize that creating a psychologically safe and supportive environment reduces disruptive behaviour. Rather than reacting to disruptive behaviour, preventive discipline seeks to establish clear expectations, consistent routines, and a supportive environment that minimises the likelihood of behavioural problems. In the context of 21st-century education, teachers are increasingly turning to digital tools to assist with this proactive approach to discipline. However, while digital tools are often promoted for their instructional benefits, classroom management, for example, ClassDojo (Manolev et al., 2024; Williamson, 2017; Ford et al., 2022, Dillon et al., 2019), there remains a lack of clarity about which tools are best suited for specific aspects of preventive discipline, such as regulating attention, reinforcing routines, or supporting positive behaviour. It has been shown that placing greater emphasis on student engagement during lessons and adopting a development-oriented, holistic approach to a child's growth leads to better long-term outcomes than isolated, uncoordinated efforts (Freiberg et al., 2020). Every teacher should consider how to create a learning-conducive environment, motivate students to learn, and foster a positive attitude toward the educational process. Classroom management, both teaching online and face-to-face, can be very challenging (Adsız & Dinçer, 2025), that can take a lot of time and demand teachers continuously seek for new solutions (Heim & Strauss, 2020).

The urgency of this issue is reflected in research and public opinion in Latvia. A comparative study across Latvia and Lithuania found that 69% of Latvian teachers experience moderate-to-high stress, and many teachers in Latvia are considering leaving the profession (Martinsons et al., 2024). Beyond these national insights, international studies have shown strong links between classroom climate and academic achievement (OECD, 2020; Wang et al., 2020).

This gap in knowledge presents a practical challenge for educators. Faced with a growing number of digital platforms and applications, teachers should make informed decisions about which tools to implement. Few studies have offered a comparative analysis of specific tools in relation to their suitability for managing preventive discipline in real classroom settings (Cho et al., 2024).

The aim of this study is to address this gap of knowledge by analysing how different digital tools support various elements of preventive classroom discipline by systematically evaluating the role of digital tools in preventive discipline. Based on feedback from Latvian general education teachers, the study identifies which tools are perceived as most useful for key preventive functions. These insights can help educators make more strategic choices about which tools to adopt for specific behavioural goals and provide a clearer understanding of how digital resources can be aligned with the principles of preventive discipline.

The research question explored in this study are:

RQ1: how do teachers perceive the role of digital tools in supporting preventive discipline and classroom management?

RQ 2: how different digital tools support key dimensions of preventive classroom discipline?

Theoretical Background

Classroom management – a set of processes through which the teacher, skilfully organizing and guiding students' activities and behaviour, shaping relationships between students and between students and the teacher, as well as the psychological and emotional climate in the classroom and the physical learning environment, achieves students' maximum engagement and independence in task-solving and subject learning. This is done in accordance with a well-considered system of value priorities, ensuring a productive teaching and educational process. At the same time, an optimal learning environment is created, which is organized and controlled by the teacher using various strategies and methods to ensure the effectiveness of the teaching and educational process. Classroom management requires specific preparedness from the teacher to competently develop and implement this system (Kalēja, 2023).

Preventive discipline is based on the idea that student behaviour can be positively influenced by creating structured, predictable, and engaging learning environments. Disruptions in the classrooms are alike, thus there is a need for preventive discipline in schools (Bayraktar & Dogan, 2017). Key principles include establishing clear expectations, providing immediate feedback, maintaining routines, and reinforcing positive behaviours (Evertson & Weinstein, 2020; Freiberg et al., 2020). Preventive classroom management aspects include a discipline plan that outlines the strategies to be used and how the learning process will be organised. These may include establishing classroom rules, providing positive feedback, modifying the classroom layout, regularly encouraging student self-assessment, using attention-getting techniques (such as eye contact, physical proximity, or silence), establishing classroom routines, and making individual adjustments where necessary (O'Neill & Stephenson, 2014). It is concluded that preventive work involves preparation for organising the learning process in the classroom. It is important to recognise that this serves as support for the teacher and provides clarity for the student. To achieve the intended goal, the teacher must clearly define the tasks and steps required to reach it. The intervention should be well-grounded and tailored to the specific class, considering the individual characteristics of the students. The teacher must remain consistent in implementing their plan. In contrast reactive models, preventive approaches aim to reduce the need for disciplinary interventions by pre-empting behavioural disruptions. Recent research emphasizes that classrooms with well-structured preventive strategies experience significantly fewer incidents of disruptive behaviour and greater academic engagement (Wang et al., 2020). Moreover, effective preventive discipline contributes to long-term student self-regulation and motivation (Gunesekera et al., 2019).

Implementing multi-tiered support systems in schools improves student behaviour and reduces disruptive conduct (Nitz et al., 2023). Thanks to new opportunities provided by digital tools, preventive classroom management can now be implemented more quickly, engagingly, and effectively, serving as a supportive system for teachers in their daily work.

In addition, successful preventive discipline relies not only on rules and routines but also on strong teacher-student relationships and student involvement in setting behavioural norms (Čotar Konrad et al., 2024; Gregory & Fergus, 2020). When students feel ownership of classroom expectations, their engagement and accountability increase.

The rise of digital technologies in education has introduced new tools that can support these goals. Research has shown that digital platforms can aid in behaviour tracking, enhance communication, provide visual routines, and engage students through interactive formats (Gregory & Skiba, 2020). Additionally, proactive use of digital reminders, visual cues, and gamified tasks has been linked to better classroom flow and fewer transitional disruptions (Wang et al., 2020). Digital strategies can support differentiated behaviour support, for example, by enabling individualised feedback or goal tracking tailored to each student's behavioural patterns (Kerimbayev et al., 2023). Digital tools capture students' attention and can be used not only to enhance learning content acquisition but also to support the management of the learning process that is, they can be applied in classroom management, including preventive classroom management. However, the effectiveness of these tools depends on their alignment with pedagogical objectives and their usability within the classroom context. Without adequate digital competence, even well-designed tools may be underused or misapplied.

Digital tools are online resources, applications, websites, or programs used with the help of modern technologies. They can also be platforms-spaces that offer access to various individual digital tools. Some tools, such as ClassDojo and Google Classroom, offer integrated features for behaviour monitoring and feedback, while others, like Mentimeter and Classroomscreen, help regulate attention and facilitate task transitions.

For example, ClassDojo offers various digital tools that support classroom management. It is a digital tool that can help ensure preventive classroom discipline in primary education. The platform includes several built-in classroom management features such as group division, timers, daily reports, student prompting, and tools for assigning and submitting work (Jacobs, 2022; Williamson, 2017).

Classcraft platform designed to enhance classroom management and student engagement by integrating role-playing game elements into the educational environment. Research has demonstrated the effectiveness of Classcraft in improving student motivation and academic performance. For instance, a study by Parody et al. (2022) found that implementing Classcraft in engineering education significantly enhanced student engagement and learning outcomes.

Google classroom is digital platform that supports teachers in organizing and managing learning activities. It enables educators to set up virtual classes, share assignments, provide assessments and feedback, and monitor all tasks within a single environment. By bridging in-class and remote learning, it facilitates continuous interaction, supports

tracking of students' progress, and helps manage academic achievements across different learning contexts (Santos, 2021).

Mentimeter is an effective digital tool that promotes student engagement and active learning, as well as enhances the learning experience by enabling teachers to adapt content to students' needs (Khan, 2023).

Classroomscreen is an easy-to-use tool that helps teachers manage the classroom and improve the learning environment. It offers multiple interactive tools in one place. The platform allows teachers to display various instructions on the screen, such as a timer, noise level monitor, or traffic light. The main strength of Classroomscreen lies in its ability to combine several widgets to support lesson goals (Ang, 2024).

Game-based platforms like Kahoot and Quizizz contribute to engagement and motivation, which are crucial for sustaining attention and promoting cooperation.

Kahoot! is a platform that enables educators to create interactive quizzes and surveys, known as "kahoots," which students can participate in using their own devices. The platform incorporates gamification elements such as points, leaderboards, and timers to foster engagement, motivation, and active participation in both in-person and online educational settings. Research indicates that utilizing Kahoot! can enhance student motivation, engagement, and academic performance (Özdemir, 2025).

Understanding the unique strengths of each tool allows teachers to choose those that best match their classroom needs. Dyer (2021) describes digital tools based on their functions from the students' perspective, using action verbs such as present, engage, and inspire. These tools were listed and briefly described. Such types of online resources help teachers become aware of the available options and choose what they need. In addition, the selection of tools should consider contextual factors, as digital behaviour management practices may vary in effectiveness across educational settings. Variations in students' prior experience with technology may influence their engagement with digital discipline tools (Kerimbayev et al., 2023).

Digital tools can be categorised according to their purpose. Given their variety, a more detailed analysis is necessary to understand which classroom management strategies they best support. Digital tools can be used in face-to-face learning, remote learning, or blended formats. For several of the tools mentioned, there is a lack of research and information about their use in preventive classroom practices-specifically, descriptions of how a particular tool can assist the teacher in promoting positive behaviour. Based on their functionality, digital tools may be free or paid and available through software, mobile applications, or online platforms.

In order to systematically evaluate the role of digital tools in preventive discipline, this study adopts a theoretical framework that combines pedagogical and functional perspectives. The pedagogical dimension includes criteria such as support for establishing routines, providing feedback, managing group behaviour, and encouraging student responsibility-core components of preventive discipline (Lewis et al., 2017). The functional dimension includes practical considerations such as ease of use, accessibility, and

adaptability across learning contexts (Kerimbayev et al., 2023). This framework guides the selection and analysis of digital tools in this study.

This study is grounded in the framework that digital tools can serve as practical extensions of preventive discipline strategies when chosen purposefully and implemented consistently. After analysing theoretical perspectives on the preventive aspects of classroom management, it was concluded that ensuring preventive learning discipline should include the following elements: monitoring the implementation of rules, grouping students, grouping students and changing seating arrangements, capturing and sustaining attention, providing feedback, establishing classroom routines, rewarding positive discipline.

Methodology

This research was conducted as a case study using a mixed-method approach (Ingram & Harbers, 2020), combining quantitative and qualitative data to explore how digital tools support preventive classroom discipline. The study focused on general education teachers in Latvia and examined both their experiences and evaluations of digital tools used for classroom management. Justification for the survey questionnaire items: the aim was to find out how widely teachers use digital tools to support preventive classroom discipline, and how and which digital tools are used to implement preventive classroom management. Justification for respondent sampling: the target group was teachers in Latvia. Teachers were selected as respondents because the aim was to understand what helps ensure preventive discipline in educational practice and how this is achieved. The snowball sampling method was used to reach survey respondents (Geske & Grinfelds, 2020), which is described as a process in which the researcher reaches potential participants through referrals from other respondents. The questionnaire, a digital survey designed to be completed via Google Forms, was initially distributed to a few teachers with a request to forward it to other teachers they knew.

A sampling criterion was established: the teacher must use digital tools in their teaching practice in order to qualify as a respondent. This requirement was included in the description when the survey was distributed and there was question, which was intended to verify whether the respondent makes use of digital technologies in their teaching practice.

Pilot study: the survey questionnaire was tested with 10 teachers (colleagues) to ensure the clarity, precision, technical design, and functionality of the questionnaire. Participants in the pilot study were selected based on convenience and trustworthiness, with the aim of obtaining more accurate and detailed feedback regarding the completion process and the comprehensibility of the survey questions. As a result of the pilot study, one of the questions was clarified, and another was reformulated to improve its structure.

Main data collected between March and May 2021. First, a structured questionnaire titled “Digital Tools for Preventive Discipline” was distributed electronically with Google forms to teachers via professional networks and educational mailing lists. Questioners

fully filled in by 304 teachers from Latvian schools. Teachers representing different levels of general education (primary school 31.3%, elementary school 33.2%, comprehensive school 38.2%, gymnasium 13.5%, vocational 6.3%, special education institution 1%).

The survey questionnaire included 15 questions: 3 open-ended questions aimed at exploring teachers' experiences and the reasons behind their choice of specific digital tools or platforms (for example, why did you choose these specific platforms? If possible, please name the main criteria for your selection.), and 12 closed-ended questions with predefined response options (for example, which digital tool platforms do you use to support classroom discipline?). Additionally, respondents were given the opportunity to provide alternative answers when necessary.

After teachers completed survey, authors for further evaluation selected twelve digital tools mentioned by respondents. Referring to the preventive classroom management aspects discussed in the theoretical framework, the author concludes that the responses provided by participants could be categorised according to the established evaluation criteria for digital tools. Teachers' answers revealed a wide range of possible applications for digital tools. Upon analysing the responses, an additional evaluation criterion emerged: time management. A significant number of participants highlighted this function of digital tools, distinguishing it from the other aspects. These tools were analysed by author using criteria derived from the theoretical framework, including pedagogical relevance (e.g., support for routines, feedback, group management) and functional features (e.g., accessibility, ease of use, applicability in different learning environments). The author chose evaluated the digital tools from the perspective of classroom management-specifically for ensuring preventive discipline-and described the tools according to their technical functionalities.

Quantitative data from the questionnaires were processed using Microsoft Excel for descriptive statistical analysis. Open-ended responses were analysed using content and thematic analysis (Geske & Grīnfelds, 2020), to identify recurring themes and teacher perceptions. Digital tool evaluations were summarised in tabular form, highlighting their functions in the context of preventive discipline. The study was conducted in accordance with ethical guidelines of the University of Latvia and Faculty of Education Sciences and Psychology, and ethical approval was obtained from respondents prior to data collection.

Results

RQ 1: how do teachers perceive the role of digital tools in supporting preventive discipline and classroom management?

Overall (see figure 1), 78% of respondents reported that digital tools helped them maintain attention and classroom structure, while 65% found them useful for providing consistent feedback. About 59% of teachers used digital tools to support rule reinforcement and classroom routines, and 51% employed them to encourage positive behaviour through gamified systems or reward tracking.

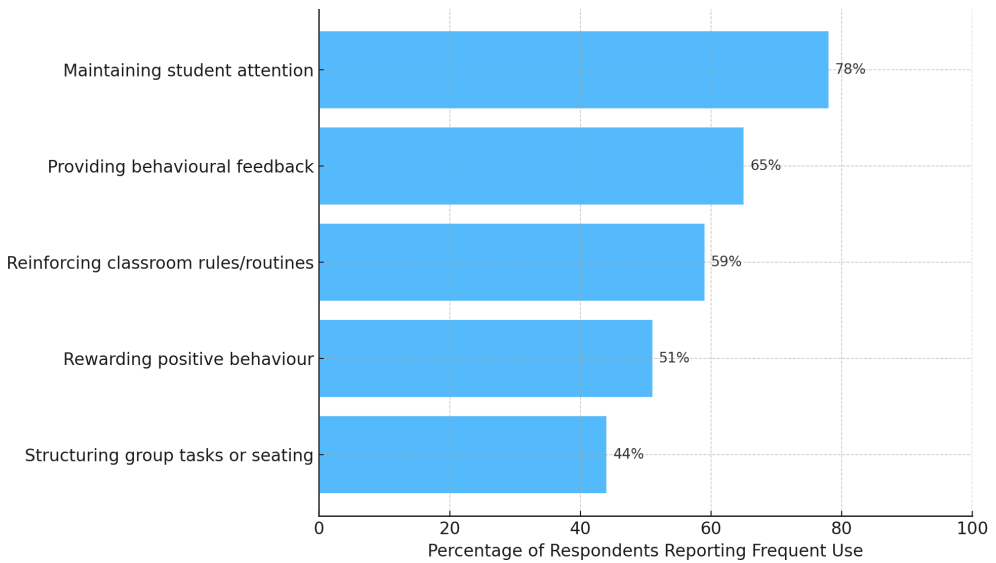


Figure 1 Teachers' Reported frequency of digital tools use across key preventive classroom management functions

In the question regarding how frequently teachers use digital tools, the results revealed the following: 15.5% reported using them in every lesson, 11.6% in every second lesson, 10.9% in every third lesson, 25.7% once a week, 7.6% once a month, 2% once every two months, 3.6% once per semester, and 23.1% stated they never use digital tools. Teachers reported that the most effective tools shared common features: they were easy to use, offered customisation, worked well across both in-person and remote environments, and allowed integration with visual or auditory prompts. Among the twelve digital tools evaluated, five were most frequently cited as supportive of preventive discipline: Class-Dojo, Google Classroom, Mentimeter, Classroomscreen, and Kahoot. In the open-ended responses, teachers noted that digital tools enhanced their ability to anticipate disruptions and respond in a more structured, less reactive manner. Some emphasised that student engagement increased when digital elements were included in routine classroom management practices, particularly in transitions between tasks.

RQ 2: how different digital tools support key dimensions of preventive classroom discipline?

To answer the second question there was provided comparative insights into the practical application of twelve digital tools for preventive classroom discipline. The tools were categorised by function and evaluated across four preventive dimensions: (1) attention regulation, (2) routine support, (3) behaviour monitoring and feedback, and (4) motivation through engagement. Table 1 summarizes the tools and their most effective use-cases based on aggregated teacher responses.

Table 1 Suitability of Digital Tools for Preventive Discipline Functions

Digital Tool	Attention Regulation	Routine Support	Behaviour Monitoring & Feedback	Motivation / Engagement
ClassDojo	✓	✓	✓✓	✓
Google Classroom	✓	✓✓	✓✓	✓
Classroomscreen	✓✓	✓✓	✓	✓
Mentimeter	✓✓	✓	✓	✓
Kahoot	✓		✓	✓✓
Quizizz	✓		✓	✓✓
Edmodo	✓	✓	✓	
Padlet		✓		✓
Schoology	✓	✓	✓	
Nearpod	✓	✓	✓	✓
Plickers			✓	✓
Seesaw	✓	✓	✓	✓

Note: ✓✓ – highly suitable for the function; ✓ – generally suitable; blank – limited or no suitability reported by teachers.

As a result of the theoretical analysis, seven preventive classroom management aspects were identified (monitoring rule compliance, grouping students, changing seating arrangements, use of reward systems, capturing and sustaining attention, providing feedback, and establishing classroom routines). The teacher survey confirmed the relevance of these aspects and additionally highlighted an eighth factor-time management.

Secondly, criteria for the functionality of digital tools were developed. The theoretical analysis identified free accessibility as an important criterion. The teacher responses confirmed the significance of having free access to tools. Furthermore, the survey revealed additional functional criteria: ease of use, appealing visual design, and a wide range of available features. Teachers also indicated that their choice of digital tools was influenced by students' preferences and the popularity of the solution (i.e., positive feedback and use by peers).

Twelve digital tools were selected for evaluation based on those mentioned by survey respondents and described in the literature review. The selected tools were: ClassDojo, Classcraft, Classroomscreen, Stopwatch, Whiteboard, Socrative, Google Classroom, Bouncy Balls, Flippity, Classflow, Mega Seating Plan, and Clickschool.

Primarily, the tools were evaluated according to whether they were designed to support the relevant aspect of classroom management: yes (+) or no (-) (see Table 2).

Three digital tools that meet the greatest number of criteria for providing preventive discipline are Classdojo, Classcraft and Classroomscreen. Consequently, these digital tools include features that specifically align with the author's research focus: the use of digital tools to ensure preventive discipline. Classdojo, Classcraft and Classroomscreen can help a teacher maintain preventive discipline in the classroom by promoting positive behaviour.

Table 2 Digital tool's alignment with the corresponding aspect that helps ensure preventive discipline

	Time Management	Tracking Task Completion	Group Division	Changing Seats	Using Rewards	Capturing & Retaining Attention	Feedback	Class Routine
Classdojo	+	+	+	-	+	+	+	+
Classcraft	+	+	+	-	-	+	+	+
Classroom-screen	+	-	+	-	-	+	+	+
Online-Stopwatch	+	-	+	-	-	+	+	-
Whiteboard	-	-	-	-	-	-	+	-
Socrative	-	-	-	-	-	-	+	-
Google Classroom	+	-	+	-	-	-	+	-
Bouncyballs	-	+	-	-	-	+	-	-
Flippity	-	-	+	+	-	+	-	-
Classflow	-	-	-	-	-	+	+	-
Megaseatingplan	-	-	-	+	-	-	-	+
Clickschool	-	-	-	+	-	-	-	+

Table 3 Digital tool's compliance with the functionality criteria

	Free	Easy to use	Visually appealing	Versatile features	Teaching mode
Classdojo	+	+	+	+	Hybrid
Classcraft	+	+	+	+	Hybrid
Classroomscreen	+	+	+	+	Hybrid
Online-Stopwatch	+	+	+	+	Hybrid
Whiteboard	+	+	+	-	Hybrid
Socrative	+	+	+	-	Hybrid
Google Classroom	+	+	+	+	Hybrid
Bouncyballs	+	+	+	-	Hybrid
Flippity	+	+	+	+	Hybrid
Classflow	+	+	+	-	Hybrid
Megaseatingplan	+	-	+	-	In-person
Clickschool	+	+	-	-	In-person

Secondarily, it was evaluated taking into account the specified functionality criteria (see Table 3).

As a result of the analysis, it can be concluded that the capabilities of digital tools from the perspective of preventive classroom management can be applied as follows:

- Classdojo is suitable for time management, monitoring rule compliance, dividing students into groups, using rewards, attracting and maintaining attention, providing feedback, and establishing class routines.
- Classcraft is suitable for time management, monitoring rule compliance, dividing students into groups, using rewards, attracting and maintaining attention, providing feedback, and establishing class routines.
- Classroomscreen is suitable for time management, dividing students into groups, attracting and maintaining attention, providing feedback, and establishing class routines.
- Online-Stopwatch is suitable for time management, dividing students into groups, attracting and maintaining attention, and providing feedback.
- Flippity is suitable for dividing students into groups, changing seating arrangements, attracting and maintaining attention, and providing feedback.
- Google Classroom is suitable for time management, dividing students into groups, and providing feedback.
- Bouncyballs is suitable for monitoring rule compliance and attracting and maintaining attention.
- Classflow is suitable for attracting and maintaining attention and providing feedback.
- Megaseatingplan is suitable for changing seating arrangements and establishing class routines.
- Clickschool is suitable for changing seating arrangements and establishing class routines.
- Whiteboard is suitable for providing feedback.
- Socrative is suitable for providing feedback.

Meanwhile, when evaluating the functional features of these digital tools, it can be concluded that: all 12 selected tools are free of charge. All except Megaseatingplan are easy to use. All except Clickschool are visually appealing.

The tools offering the broadest range of uses are Classdojo, Classcraft, Classroomscreen, Online-Stopwatch, Google Classroom, and Flippity.

All 12 tools can be used in face-to-face teaching.

For remote or blended learning, the following tools can be used: Classdojo, Classcraft, Classroomscreen, Online-Stopwatch, Whiteboard, Socrative, Google Classroom, Bouncyballs, Flippity, and Classflow.

After analysing the digital tools, the authors concludes that the three most frequently encountered aspects are: feedback provision, which is met by eight digital tools. Attracting and maintaining attention, which is met by seven digital tools. Group division and time management, each of which is met by five digital tools. The most suitable digital platforms for ensuring preventive discipline are Classdojo, Classcraft, and Classroomscreen. From a functionality standpoint, all evaluated tools are free and freely accessible.

Eleven tools are easy to use, and eleven tools are visually appealing. Six out of the twelve tools meet all the specified functionality criteria and can be employed both in face-to-face and remote teaching: Classdojo, Classcraft, Classroomscreen, Online-Stopwatch, Google Classroom, and Flippity. Megaseatingplan and Clickschool are not practical for remote teaching—since the teacher cannot assign or verify seating when a student is at home—but they are valuable tools for face-to-face teaching.

These digital tools offer extensive possibilities for promoting positive student behaviour in order to ensure preventive classroom discipline. This evaluation allows educators to review how well each digital tool aligns with the identified aspects and functionality criteria.

Discussion

The comparative analysis of twelve digital tools revealed meaningful differences in their perceived effectiveness for supporting various preventive discipline functions. Three digital tools that meet the most aspects of providing preventive discipline: Classdojo, Classcraft and Classroomscreen. ClassDojo and Google Classroom stood out as strong platforms for behaviour monitoring and feedback, suggesting that teachers rely on these tools for structured communication and tracking student progress. It is in line with previous research (Williamson, 2017; Ford et al., 2022; Dillon et al., 2019). Classroomscreen and Mentimeter rated highly for supporting attention regulation and classroom routines, likely due to their interactive visual elements and flexibility in guiding transitions. Kahoot and Quizizz were most useful for maintaining student motivation, showing how game-based tools contribute to positive engagement and behaviour reinforcement. This aligns with earlier research showing that incorporating these digital tools into the learning process leads students to demonstrate both higher, long-lasting motivation and invest more effort in their learning (Figuccio & Johnston, 2022; Schmidthaler et al., 2025).

Teachers responded more favourably to tools that were simple to implement and clearly matched with a preventive discipline component, reinforcing the importance of functionality over general appeal. The study also highlights that there is no single “best” tool; rather, different tools excel in different domains. Therefore, school administrators and educators should consider a portfolio approach to digital classroom management, thus choosing tools based on classroom needs and discipline priorities. The Austrian study on the functionality of digital tools also confirms that a teacher must select a digital tool based on the learning objective (Schmidthaler et al., 2025).

The findings of this study suggest that digital tools play a valuable role in supporting preventive discipline practices in classrooms. Teachers widely recognized that tools such as ClassDojo, Google Classroom, and Classroomscreen helped maintain student attention, structure routines, and provide timely feedback.

The frequent use of digital tools to track behaviour, reward positive actions, and guide transitions indicates that teachers are not only aware of their preventive potential but also actively integrate them into their daily routines. This could confirm that educators use these technologies with intentionality, aiming to reduce behavioural issues before they

arise. However, it should be noted that Tilibaša et al. (2023) concluded that teachers must also be aware of the potential risks of digitalization that may affect them, and that going forward, work must be done to motivate teachers to use digital tools with confidence and on a regular basis. Probably in future after the first attempts to use the different tools for classroom discipline purposes, there is need for deeper look at it as it is argued that such tools as ClassDojo intensifies discipline and normalizes the surveillance of students at school (Manolev et al., 2018).

The study addressed the research question by identifying which digital tools are perceived as most suitable for preventive discipline. Teachers reported that digital solutions were particularly effective for supporting attention regulation, reinforcing routines, and facilitating behaviour monitoring that are three pillars of proactive classroom management. Limitations include the self-reported nature of the data, potential respondent bias, and the context-specific focus on Latvian schools. While teacher perspectives are invaluable for understanding everyday practice, future studies should consider triangulating self-reports with classroom observations or behavioural outcome data to increase validity.

Moreover, as this research focused exclusively on general education settings in Latvia, further studies in other national or school system contexts would help evaluate the broader applicability of these findings. Cross-cultural comparisons could also shed light on how digital discipline tools function across different educational environments.

Conclusions

The findings of this study confirm that digital tools can play an important supporting role in preventive classroom discipline; however, no single tool was found to comprehensively address all key aspects of this approach. Instead, different tools proved to be more effective for specific functions. For instance, ClassDojo and Google Classroom were most associated with monitoring behaviour and providing structured feedback. Three digital tools that meet the most aspects of providing preventive discipline: Classdojo, Classcraft and Classroomscreen. Classroomscreen and Mentimeter were valued for their role in supporting attention regulation and establishing classroom routines, while game-based platforms such as Kahoot and Quizizz were identified as especially useful for maintaining student motivation and encouraging positive behavioural engagement.

Overall, teachers preferred tools that are easy to implement, visually organised, free of charge and suitable for both in-person and online learning formats. These results highlight the importance of aligning tool selection with pedagogical goals, emphasizing that functionality and discipline-related relevance should take precedence over general popularity. The wide range of available tools also allows for flexibility, enabling educators to adapt preventive strategies to their specific classroom contexts.

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STUDENT PARTICIPATION METHODS TO IMPROVE ENGAGEMENT AND UNDERSTANDING OF THE MATERIAL: PRE-RESEARCH

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ABSTRACT

In today's world students of all levels (bachelors, masters, business education students) have decreased level of concentration and lectures nowadays have to be more engaging and interactive for students (Marquez et al., 2023). The article is based on research results whether methods that are used by academia at the moment are efficient not only as engaging activity but also add to understanding of the material. Research aims to understand which student participation methods are the most popular among lecturers and business instructors, as well as to identify main challenges in implementing new methods. In the context of this research, participation methods are understood as methods of student involvement during the lectures, which are aimed at increasing student concentration, involvement in the learning process and positively influencing learning outcomes.

For the purpose of this research author has conducted a survey of 56 lecturers (academic staff) and business instructors from various Latvian higher education institutions, thus method of the research is collection and analysis of quantitative data.

Results of the survey have shown that majority (but not all) top participation methods used coincide both in terms of being most efficient for engagement and also understanding of the material. Through the research some hypotheses were tested and approved. For example, research hypothesis "Instructors with more experience (hence, tenure) are using less participation methods than their younger counterparts" has been confirmed as survey data showed that instructors with more than 25 years of experience use the smallest amount of participation methods.

Survey material provides additional field for research. As an example, participation method "real case studies" that are ranked quite high in terms of both efficiencies, are not ranked high in terms of frequency of use. Hypothesis to be tested in the future research is that it takes a lot of time to prepare and requires to have access to qualitative resources.

Keywords: *artificial intelligence, ease of understanding the material, efficiency of learning, participation methods, student engagement*

Introduction

Various studies show, how crucial is student engagement for their learning and development. Students, who are more engaged, show higher academic performance and overall motivation for studies; they develop better critical thinking and problem – solving abilities and also enhance their social and emotional skills. On the other hand, a lot of psychological research also shows that in the modern world students are faced with decreased level of concentration due to information overload, constant social media stimulation and overall social anxiety (Mark, 2023; Marquez et al., 2023).

This all presents additional challenge to higher education teaching staff as they are faced with the need to be more engaging, use more digital methods and incorporate different participation methods in their lectures. To address this, educators must adopt innovative teaching strategies that foster active learning and student participation. This may include a lot of different options starting with as simple options as class or group discussions going forward to elaborative digital tools such as gamification techniques, virtual whiteboards or real-time polling options. Furthermore, collaborative learning techniques, such as group projects, and problem-based learning, can provide students with hands-on experiences that make learning more meaningful.

We must not forget the wider options presented to educators by Artificial Intelligence tools. AI-driven technologies can personalize learning experiences, provide real-time feedback, and create interactive classroom environments that encourage active participation.

The real question of course, is whether educators have enough time, resources and motivation to expand their participation methods horizon, incorporate new approaches and enhance student experience with AI-driven technologies. Educators already face significant workloads, balancing curriculum planning, grading, mentoring, and administrative responsibilities. The introduction of new resources requires additional time for training, experimentation, and adaptation. Many professors may struggle to find the time to learn and incorporate new participation methods while managing their existing responsibilities (Biggs & Tang, 2007).

Through the pre-research author aimed to gain an understanding of the existing situation – what methods already are most widely used, what methods educators deem to be the most efficient in terms of learning experience and educational results. The study also tries to understand what limits educators from learning and incorporating new methods in their everyday teaching style. Research also provides some insights into usage of Artificial intelligence tools.

Literature review

As the oldest and most widespread teaching format in higher education, lectures continue to play an important role in teaching and learning processes (Hoidn & Klemenčič, 2021). On the other hand, lectures often require students to listen passively rather than engage actively with the material. Research (Freeman et al., 2014) shows that active

learning (e.g., discussions, problem-solving) leads to better understanding and retention. Comprehensive meta-analysis of 225 studies that was conducted, revealed that active learning methods, such as group discussions, problem-solving, and interactive activities consistently outperform traditional lectures. Students are not only finding such teaching methods more engaging and participate more, but also score higher on exams and were 1.5 times less likely to fail compared to those in traditionally lecture-based courses. Moreover, lectures can involve a lot of information delivered in a short time, which can be quite overwhelming for the students – without time to process and apply the information, students may forget much of what they heard.

Whilst understanding the situation and seeing practical value in making lectures more engaging, academic staff still might be reluctant to adopt new participation methods during lectures. There are many possible reasons, most important of which would be:

- 1) Time constraint and workload. Implementing active learning strategies often requires significant preparation time, which many lecturers find challenging given their existing workloads (Biggs & Tang, 2007).
- 2) Traditional teaching habits. Many educators are accustomed to traditional lecture formats and may feel negative about shifting to more interactive methods. This resistance is sometimes rooted in a preference for familiar teaching styles and also in a reluctance to adopt and use new technologies, which can be referred to technological anxiety (Aparicio-Gomez et al., 2024).
- 3) Lack of training and support. Effective implementation of new participation methods often means specialized training. Academic staff needs to become students to effectively use active methodologies and receive support along the way of doing so (Aparicio-Gomez et al., 2023).

Very important topic in the modern educational world is the adoption and effective usage of AI provided tools, also in order to boost engagement of the students and enrich participation methods used. Based on the report released in 2024 by Ellucian, the leading higher education technology solutions provider, it seems that despite the recognized benefits of Artificial Intelligence (AI), its use in higher education is not as widespread as perceived, although 93% of higher education executives are expecting greater use of AI over the next two years. Faculty hesitancy still remains high – while 61% of faculty have used AI in teaching, 88% do so minimally, indicating a cautious approach to AI integration in pedagogy.

Methodology

Research includes both theoretical and empirical approach, analysing the academical literature available on the topic as well as statistical data collected.

The empirical study was conducted using quantitative research method, namely survey. Since survey questions are uniform for all respondents, the data collected is consistent and standardized. This reduces researcher bias and ensures objectivity in data collection and analysis.

Survey consisted of 12 questions overall, 3 of which were mainly needed to identify how broad and homogeneous the survey sample is, such as, what university educator represents, what subject he or she teaches and what is their teaching experience (in years).

Since it is pre-research, that would be further expanded in my future PhD thesis, number of respondents is not that high – 56 educators. They represent, though, wide selection of Latvian educational institutions – University of Latvia, Riga Technical University, Riga Business School, RISEBA, BA School of Business and Finance and some others. Educators represented also diverse field of subject taught – science and calculative subjects such as math, medicine, management, social studies and others. Largest group of educators represented 5 to 15 years of experience with some colleagues have less than 5 years of experience and some even more than 25 years.

From the content perspective, the research concentrated on the following areas:

- 1) What participation methods are lecturers using and how would they rate efficiency of those methods in terms of student engagement and understanding the material
- 2) How widespread is the use of AI to boost participation and do lecturers see value in it
- 3) Are lecturers interested to learn and incorporate new methods of participation in their lectures and what are the main obstacles on the way

The respondents were reached through fellow scholars in each of the university, using convenience sampling approach. Collected data were then statistically analysed and conclusions were made. All ethical norms were taken into account – participants were informed about the aim of the research and agreed to participate voluntarily. All the responses were anonymous without the possibility to identify specific person and his / her response.

Results

The collected data provided valuable insights into educators' experiences and the strategies they use to enhance student participative experience.

Most actively used participation methods were class and group discussions with respectively 89% and 81% of all respondents mentioned that they are using this student participation method. Altogether respondents were given 9 participation methods to choose from with the option to add their own methods not mentioned before. (see Table 1)

Table 1 Most popular participation methods by the percentage of all methods mentioned

Class discussions	89%
Group discussions	81%
Student presentations	81%
Practical work (calculations etc.)	66%
Real life cases	64%

Table 2 Most effective participation methods in terms of student engagement and understanding the material

	Engagement	Understanding
Top1	Group discussion	Practical work
Top2	Practical work	Real life case studies
Top3	Real life case studies	Group discussion

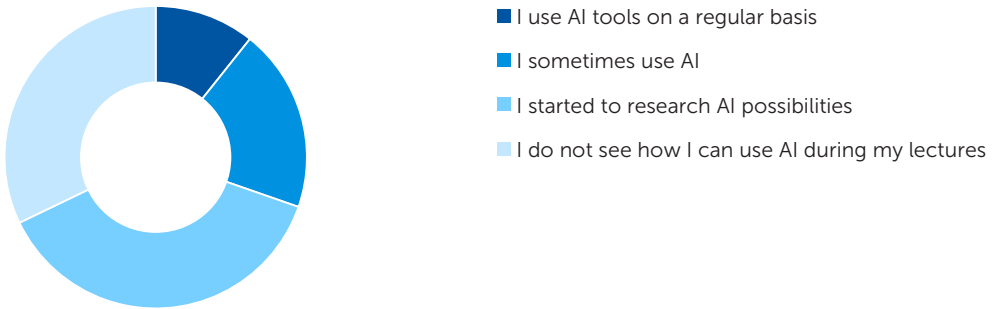


Figure 1 AI usage frequency within respondents

Interestingly enough digital components, such as Kahoot and Mentimeter as well as class work using digital platforms were rated quite low, notwithstanding the overall active discussions on the need of higher level of education digitalization. Such answers showcase the reality of the educational system, where quite many lecturers (especially with bigger teaching tenure) do not find themselves comfortable with using new technologies and adapting lecture plans to include more digital elements to it. Additional participation methods mentioned were games, debates, participatory action research.

Next, research elaborated on most effective (from the lecturer’s point of view) participation methods both in terms of engagement and also understanding the material. (see Table 2)

Following those questions, research analyses AI usage withing the educational force. When asked how actively lecturers are using AI as part as part of engagement, only a bit more than 30% mentioned that they use AI tools sometimes or on a regular basis. This somewhat corresponds to AI overall adoption statistics in Latvia (Rait Custom Research Baltic, 2024). (see Figure 1)

Those who are using AI quite actively, mentioned interesting examples of AI involvement for boosting engagement, apart from quite common-sense answers of analysing the quality prompts and also using AI for generating student assignments, quizzes and the like. Most interesting examples of AI usage were:

- If the student is not able to answer the posed question the lecturer would ask the same question to ChatGPT and then explain why Generative AI models could take the student job place if they would not start applying critical thinking methods.
- Allowing students to see Generative AI answer to the same question and then analyse as a class which answer is better and why.

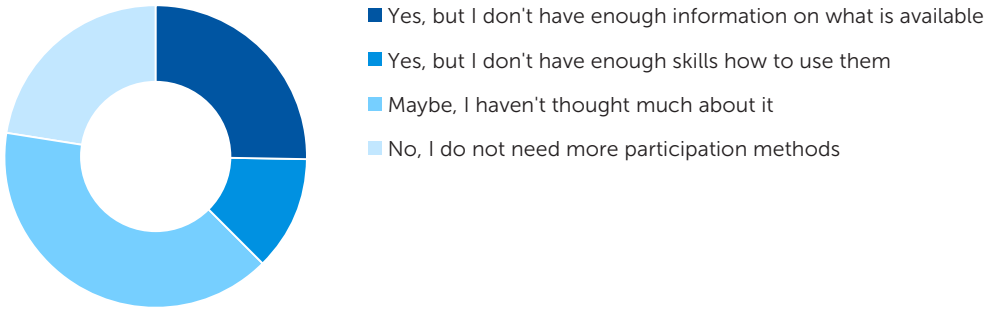


Figure 2 Conditions holding back from adopting new participation methods

Table 3 Average number of participation methods used by certain lecturers' tenure group

more than 25 years	4.33
16–25	5
5–15	6.21
less than 5	5.63

Generally, lecturers would like to learn more about new participation methods and use wider variety of those, but followed by the question why they are not doing so, the two most frequent answers given were “not enough time” and “not enough knowledge”. Quite alarming and also frequent answer was “I have no motivation to do more, as I will not get more in return”. There are no direct financial benefits for an average instructor to make lectures more engaging, unless they are intrinsically motivated to deliver more effective lectures for their students. (see Figure 2)

Through analysing answers on a deeper level, it was possible to identify several connections between lecturers' types and their approach to the participation methods.

For example, instructors with more experience (hence, tenure) are using less participation methods than their younger counterparts, as they have higher resistance to change and less adaptivity to new skills and methods. The table below shows the average number of participation methods used by the certain lecturers' group (grouped by the years of teaching experience). Instructors with more than 25 years of experience indeed use the smallest number of methods, but the connection is not linear, as the least experienced lecturers are not using the biggest number of participation methods (their more experienced colleagues from 5 to 15 years of teaching experience do). (see Table 3)

Analysing answers by subject, it becomes clear that STEM subjects (Science, Technology, Engineering and Mathematics) are taught with the least number of participation methods. Table below presents average number of participation methods used by the lecturer based on the subject that is taught, where lecturers for IT and Science subjects have less than 4 methods used on average. There is a clear logic behind it – it is quite hard to “discuss” mathematics or programming, participation methods used are mainly calculations and practical exercises, whereas management subjects, for example, give plethora of opportunities to engage students in the lecturing process. (see Table 4)

Table 4 Average number of participation methods used by certain subject lecturers' group

Science + IT	3.91
Management	6.57
Social	6.42
Business trainers	6

Table 5 Frequency of AI usage by certain lecturers' tenure group

more than 25 years	0.6
16–25	0.87
5–15	1.35
less than 5	1.17

Talking about AI adoption in the education process, it becomes clear that lecturers with more experience (hence, tenure) are less interested to use AI tools to enhance student participation. To see the connection, I have attributed “0” for each answer “do not use AI at all” and “3” for each answer “use AI on a regular basis” and then calculated the average for each tenure group. Results are summarised in the table below. Similar as with the previous analysis on the overall number of the participation methods, the connection is not linear here as well, where the least experienced lecturers are not the ones using AI to the fullest extent. (see Table 5)

Discussion

Despite the rapid expansion of research on artificial intelligence in education, not many papers focus academic staff perspectives and the ways in which these shape the development of future-oriented teaching in higher education institutions. The results of this study with regards to usage of AI tools align with quite recent research (Mah, Knoth & Egloffstein, 2025) that suggested that although AI based tool score high (among the academic staff) when asked about the importance, but still score low, when asked about the frequency of actual use. 73% of the Mah, Knoth and Egloffstein survey respondents attributed 4–5 score out of 5 maximum to the relevance of AI based tools to the education, but only less than third of the respondents stated that the frequency of the usage is “somewhat frequent”.

Quite a lot of research papers study student perspective on usage of digital tools, as, for example, recent study (Godsk & Møller, 2025) found that 87% of the students believe that technology used as a participation method (videos, quizzes, polls) increased their engagement and made it easier for them to participate actively. On the other hand, the research investigating academic staff perspective is quite scarce. Study on the overall faculty members perception towards active use of participation methods (Ilhan, 2022) indicates that faculty members generally have positive attitudes towards active learning. They believe it not only increases student understanding of the material, but also boost

important social skills, such as, for example, self – confidence. Similarly to the data suggested in my research, also Ilhan’s study underlines faculty members’ concerns towards more preparation time and knowledge needed for including more participative activities.

Conclusions

Class discussion are not ranked Top 3 not as most effective in terms of engagement, nor in terms of understanding the materials, but nevertheless is the most widely used method among all lecturers. Potential explanation to it could be the fact that class discussions are easy to run and they do not require much additional preparation time. It is easy for the lecturers to engage students in the class discussion on an ad-hoc basis, if the time allows.

On the other hand, real case studies, that are ranked quite high in terms of efficiency, are quite rarely used. This represents a reverse situation, as it takes a lot of time and effort to prepare or find the case and case analysis requires much more time during the lecture, so it has to be well aligned with the other elements of the lecture.

Notwithstanding the digitalization approach, not many are using digital methods of engagement. Hypothesis to be solved in the future research: not everyone is equally good with the new technologies, especially lecturers with bigger experience.

For lecturers to be more motivated to embrace new participation methods in their lectures there has to be some benefits (not necessarily monetary) in doing so. But even before that, there has to be a clear system how to measure the engagement during the lectures.

Lecturers with the biggest tenure use the smallest number of participation methods – potential hypothesis here can be that they are least adaptive to learning new skills and, perhaps, have the least motivation to learn new things. STEM subject professors on average use less participation methods than their colleagues teaching social science and management. Speaking about AI usage, academic staff with the longest tenure are the ones that are least interested to incorporate AI in their educational process.

Potential topics for further Research

In further research author sees opportunity to expand on the following topics:

- 1) Expand the sample of the research to include more universities and professors around Latvia to bring more statistically valid conclusions.
- 2) Explore the connection between student participation methods used and academic performance of the students.
- 3) Add students perspective and analyse what participation methods lead to better perception of the material and better learning outcome from the students point of view.
- 4) Analyse the causes for rather limited digital participation methods usage and AI adoption in the education process.

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PLAYERS OF DIFFERENT ROLES SELECTION FOR AN ELITE STUDENT FOOTBALL TEAM

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ABSTRACT

The main position of players during a football match may vary, either fully or partially. This also applies to the tactical and strategic aspects of an attacking central midfielder's performance.

The aim of the study is to improve the components of competitive activity of the attacking central midfielder during talent selection for an elite student football team. It is based on a method of specialized teaching and training for attacking central midfielders during the selection process. Methodology. Footballers ($n = 23$) from the elite student team were involved by the coaching staff to the attacking central midfielder position. This team participated in the Ukrainian Championship among higher educational institutions during the 2014–2023 seasons. Research methods included pedagogical observation of competitive activity and detailed analysis of the attacking central midfielder's performance.

Results. A significant correlation was found between shots on goal and overall effectiveness ($0.05 \leq r \leq 0.15$), confirming that scoring depends on both the number and quality of shots. “Zigzag” movements without the ball correlated ($0.12 \leq r \leq 0.48$) with goals scored, while “zigzag” movements with the ball also correlated positively ($0.11 \leq r \leq 0.29$).

Conclusions. Individual tactical and strategic actions of attacking central midfielders are subordinated to team play, but improvisation remains essential, adding tactical surprise and disorienting opponents.

Keywords: *tactics, talent, selection, strategy, students*

Introduction

Tactics and strategy in modern sports, including football, have been widely studied (Ávila-Moreno et al., 2018). The questions of their deep interrelation as well as tactical and strategic actions are not fully studied (Aranda et al., 2019). This concerns the harmonious unity of tactics and strategy (Lago, 2009), which reflects high-level game intelligence (Dulibskyy et al., 2018). These components of football competitive activity are still understudied (Almeida et al., 2014).

The individual tactical and strategic actions of an attacking central midfielder (ACM) are subordinated to the collective game (Barreira et al., 2013). Yet, this does not diminish the impact of highly skilled individuals who playing lead their teams (Lepschy et al., 2018). At the same time, improvisation – both individual and collective – adds tactical surprise and disorients the opponent (Bush et al., 2015).

This work integrates contextualised, role-specific indicators into student-football selection, links micro-actions to outcomes for ACMs, and motivates standardized, mixed-method evaluation protocols tailored to university-level constraints.

Literature analysis

Elite football competitions reveal how situational variables – match location, opposition quality, and score-line – shape possession strategies and ball recovery (Aranda et al., 2019). Home teams, leading sides, or those facing weaker opponents tend to dominate possession and press differently, which alters role demands across defenders, midfielders, and forwards (Lago, 2009; Lago-Ballesteros et al., 2012; Almeida et al., 2014). Ball recovery patterns highlight collective pressing and role-specific contributions (center-backs' cover balances, midfield screens, forwards' curved pressing) (Barreira et al., 2013). The status of the match further modulates the frequency and effectiveness of technical actions aimed at changing the outcomes, while micro-actions (such as passes into dangerous areas, shots, and ball-recoveries) vary depending on the role and positional context of the player's game actions. (Konefal et al., 2019; Liu et al., 2015; Yue et al., 2014).

Player positions reflect different physical loads and technical demands. Modern roles require repeated accelerations and precise specialized actions (Bush et al., 2015). Youth match data emphasize early role-specific training: defenders (aerial duels, tackling), midfielders (linking play, scanning, passing variety), wingers (1v1 ability, dangerous passes), and forwards (unpredictable movements, effective finishing) (Pettersen & Brenn, 2019). Network analysis identifies how player additions or role changes shape the tactical-strategic orientation of passes and their threat to opposition structures, informing passing and connectivity patterns for evaluation by club and association staff (Praça et al., 2017).

Longitudinal evidence indicates that, under match conditions, speed-related qualities and technical proficiency in adolescent and youth footballers are stronger predictors of professional success than general motor abilities, underscoring the need for selection models prioritising specific, role-relevant attributes over broad athleticism (Höner et al., 2017; Sieghartsleitner et al., 2019). Football selection should emphasize role-specific qualities rather than broad physical ability. Process- and product-oriented assessments can yield divergent judgments, so coaches and scouts should triangulate observational data with metrics (Sgro' et al., 2016). Together, these findings advocate for a multi-criteria selection process that emphasizes technical performance specific to the role under conditions of strong opposition, quick changes in game situations, and fatigue, with clearly modelled development possibilities.

Mixed-method observational tools, such as REOFUT, enable reliable coding of offensive tactical behaviors, linking match events to tactical intentions and permitting role-by-role diagnostics that move beyond raw counts (Aranda et al., 2019). Critical reviews highlight limitations in traditional performance analysis – fragmented variables, context neglect, and limited external validity – while calling for integrated approaches that blend event, spatiotemporal, and tactical data (Mackenzie & Cushion, 2013; Sarmiento et al., 2014). Systematic reviews confirm rising trends toward network metrics, contextualized indicators, and tactical-technical coupling, with invasion sport frameworks offering cross-fertilization for soccer role analysis (Sarmiento et al., 2018; Ávila-Moreno et al., 2018; Tomanek & Lis, 2020).

Set plays during football matches remain crucial stages. Competencies such as delivery accuracy, timing in the air, and anticipation significantly affect the outcomes (Vynogradskyi et al., 2016). Ukrainian studies highlight the importance of speed qualities in set pieces, detailing tactical patterns for wide players in student teams (Dulibskyy et al., 2016; 2018). Selecting players who combine open-play value with set-piece specialization significantly impacts expected goals.

Despite advances, most evidence focuses on professionals, with little emphasis on student-elite constraints (academic workload, reduced training hours). Methodological heterogeneity also limits external validity, underscoring the need for standardized, mixed-method evaluation linking tactical intention, physical execution, and match context (Sarmiento et al., 2014, 2018; Lepschy et al., 2018). Future work should validate selection models longitudinally in elite student cohorts, integrate network and set-piece micro-roles explicitly, and report context-stratified benchmarks to guide role-specific cut-offs.

This study focuses on ACMs within an elite student cohort competing in Ukraine, examining how micro-actions related to game creation and build-up associate with scoring outcomes under real competition constraints.

Hypothesis

The implementation of a specialized teaching and training method for attacking central midfielders during the sports selection process improve the competitive activity components of student football players, particularly through enhanced game creation and build-up play.

The **aim** is improving the components of competitive activity of the attacking central midfielder in student's football team. It based in offer a method of specialized teaching and training of the ACM in the process of sports selection.

Methodology

The research was conducted with youth players from FC Lviv and FC Karpaty (Ukraine) competing in the Ukrainian Youth Football League (U-19, U-21). At the same

time, these players were university students representing the Ivan Boberskyi Lviv State University of Physical Culture.

The study was carried out in cooperation with scientific groups of the University, FC Karpaty, and statistical platforms Wyscout and Stats Perform (Vynogradskyi et al., 2016).

Methods

Theoretical: analysis of specialized literature (Sarmiento et al., 2018; Tomanek & Lis, 2020).

Empirical: pedagogical observation of highly qualified football teams (Yue et al., 2014; Liu et al., 2015), and the playing activity of ACMs (Lago-Ballesteros et al., 2012). Video and television materials from Ukrainian (Dulibskyi et al., 2016) and foreign elite teams (Konefal et al., 2019) were analyzed.

Each season, general and special training was monitored twice (autumn and spring). Players were tested two weeks before the start of official competitions. The battery included six variables:

- Sprint 15 m and 30 m
- 30 m “zigzag” run (90° change every 10 m)
- Long jump
- High jump
- Shuttle run (7 × 50 m).

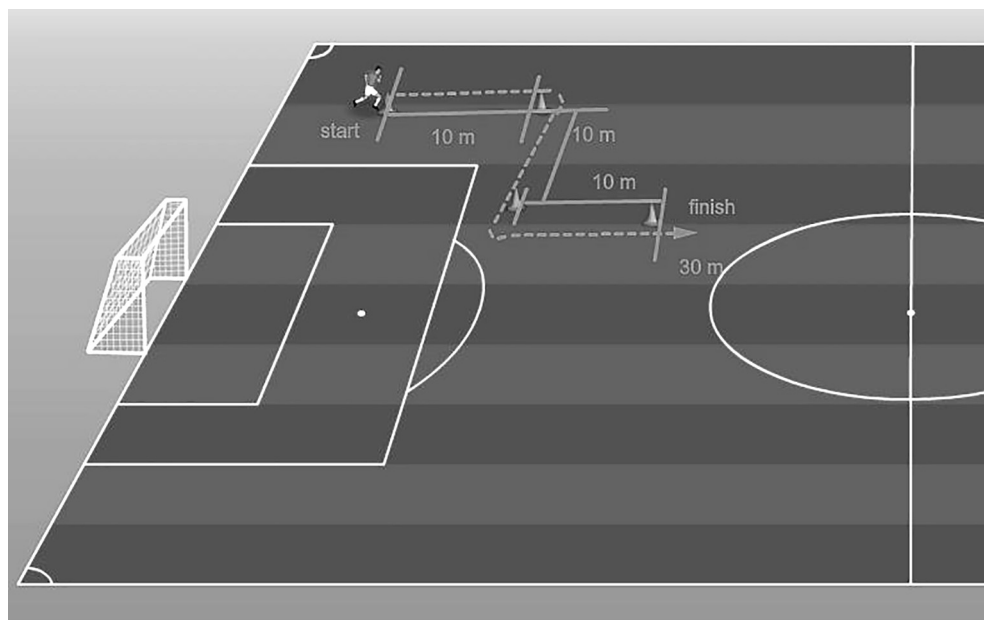


Figure 1 Running 30 m with a change of direction 90° every 10 m («zigzag»)

Three tests were conducted with a twin photoelectric sensor (Microgate, Italy) at the starting and finishing line. The first test was a 30 m sprint ($r_{tt} = 0.16$) (Höner et al., 2017). The second test was a running 30 m with a change of direction 90° every 10 m (“zigzag”) ($r_{tt} = 0.23$) [6]. And the third test was a 7×50 m shuttle run ($r_{tt} = 0.25$) (Dulibskyy et al., 2016). The long and high jump was conducted with a professional kennel platform (Sgro’ et al., 2016). This is Kistler Quattro Jump ©, equipped with Quattro Jump software © Version 1.08 Copyright © 2002, Kistler Instrumente AG.

During the “zigzag” test, in the first preparatory phase, the player takes a high start position. In the second, active phase, the player starts and tries to overcome the distance of 30 m in a “zigzag”. The direction is changing by 90° every 10 m as quickly as possible ($r_{tt} = 0.23$) (see Figure 1).

A significant correlation was observed between shots on goal and the effectiveness of the game ($0.05 \leq r \leq 0.15$). This is proof that the number of goals scored on the number and quality of shots on goal. “Zigzag” without ball is correlated ($0.12 \leq r \leq 0.48$) with the number of goals scored in the opponents’ goal. “Zigzag” with ball is correlated with the number of goals scored too ($0.11 \leq r \leq 0.29$).

The special training of players was determined by using three tests described by Sieghartsleitner R. et al. (2019). The special training was measured through additional three tests. A dribbling test was executed with the same trajectory as the agility test. The only difference being that it was performed with a ball instead of without a ball ($r_{tt} = 0.26$). A passing test was adapted from the passing test used by Höner et al. (2017). In this test, players passed the ball from a confined zone against four walls, in turn, one in each direction. After the fourth pass, the same sequence was repeated in reverse order (reaching nine passes). Time served as the test score and was measured manually with stopwatches ($r_{tt} = 0.28$).

In a shooting test, footballers kicking eight times into the target zones of the goal (2 targets, 2 attempts). Successful shots on the target were subjectively rated by speed on a three-stage scale. There are low, medium, or high speed and denote 1, 2 or 3 points. The test score was the total number of points ($r_{tt} = 0.21$). The protocol for the test battery was standardized (warm-up, order of tests, trained team of testers). It was executed on dry synthetic turf only. For the 30 m sprint, “zigzag”, dribbling and passing tests, the better of two attempts was used for data analysis ($p < 0.05$). For the 7×50 m shuttle run intermittent recovery test, only one attempt was possible ($p < 0.01$).

It was determined the quantitative and qualitative indicators of the game creation and build-up of the ACM. It has been developed the methodical complex of means of teaching, learning and training of the attacking central midfielders. Players of this role were the main carriers of the creative potential of the team attack in modern football strategies. They based on the principles of tactical and strategic control of the playing space in the central areas of the pitch. This is the area of defence of the goal. And this is the areas of creation and completion of dangerous scoring chances at the goals of the opposing team.

We have developed and proposed a complex of means aimed at the development and improvement of the game of ACM. Emphasis was placed into individual and

individual-team thinking in the process of tactical and strategic actions of ACM. An algorithmic set of tasks has been offered for teaching, training and improving tactical and strategic actions of ACM. The algorithmic was used on the above mentioned students' team in the training process during individual and team training sessions. The training sessions were in a certain sequence and with a certain dosage (see Table 1).

Table 1 Conditional algorithm using technical-tactical and tactical-strategic tasks

Task	Task conditions
1.	<p>A group of footballers is organised into three distinct subgroups, each identified by a specific kit colour. One designated player from each subgroup is positioned on the perimeter of a smaller, notional circle marked with cones, situated within a larger, similarly marked circle.</p> <p>Players stationed on the outer circle engage in ball circulation using one or two-touch passing. Their objective is to maintain possession while moving laterally from right to left. Meanwhile, the designated players inside the smaller circle act as receivers. Upon receiving the ball, the inner-circle player executes a turn and distributes the ball in the opposite direction, facilitating dynamic play and directional change.</p> <p>This exercise encourages players on the outer circle to evade individual marking by a hypothetical opponent, simulating scenarios of spatial awareness, quick decision-making, and off-the-ball movement under pressing.</p>
2.	<p>A structured $n \times n$ positional exercise is employed to facilitate ball progression into high-threat zones adjacent to the opposition's goal. The sequence is initiated by the goalkeeper, who plays out from the back via a goal kick or short distribution. The ball is then circulated through the defensive line, with the centre-back tasked with advancing possession through designated channels of play.</p> <p>Progression continues through the midfield, culminating in a pass to the attacking central midfielder (ACM), who is responsible for executing the final ball into a predefined danger area – typically the half-space, edge of the penalty box, or central attacking zone. The subsequent phase introduces active defensive pressure, simulating realistic opposition behaviour. This stage emphasises offensive tactical cohesion and strategic decision-making under duress, reinforcing principles of positional play, spatial exploitation, and transitional dynamics</p>
3.	<p>An $n \times n$ small-sided game is conducted on a reduced-size pitch featuring four mini goals positioned at each corner or flank. The exercise mandates high-intensity tactical and strategic movement, both on and off the ball, across all zones of the playing area. Ball retention and circulation are prioritised in the central zone, with players encouraged to transition possession into designated danger areas – typically wide channels or the final third – through incisive passing and positional rotation. A goal is officially recorded only when the attempt is executed with a first-time finish, reinforcing principles of quick decision-making, spatial awareness, and technical precision under pressure.</p> <p>This format promotes fluid attacking play, encourages overload creation, and enhances players' ability to operate within tight spaces while maintaining tactical discipline</p>
4.	<p>A small-sided game of $n \times n$ on four small goals in a reduced-size court, with six “neutral” players off the pitch. A vital requirement is the rapid tactical and strategic movement of players and the ball in all areas of play. Possession and distribution of the ball into high-risk tactical and strategic zones are key. The “neutral” players are restricted to one-touch play. The “neutral” goalkeepers safeguard two of their team's goals by adjusting the goal line. A goal is considered scored if it is directed towards the goal in a single touch</p>

Task	Task conditions
5.	An $n \times n$ small-sided game on two large goals on a reduced-size pitch divided into three playing zones. Introducing the ball into play through the goalkeeper, engaging players in various positions. The execution of coordinated tactical and strategic maneuvers is conducted through the ACM. The ACM delivers the final pass to the central striker of their team. A goal is scored when the ball is directed towards the goal in a single touch following the pass from the ACM
6.	A small-sided game of $n \times n$ on two large goals on a reduced-size court. A key requirement is the quick tactical and strategic movement of players and the ball in all playing areas. Ball control and the speedy transition of the ball into dangerous playing areas for the opponent. Upon the coach's signal, two players execute an acceleration outside the playing area and circumnavigate the pre-installed obstacles. At this juncture, the ball must be fed into the danger zone in front of the goal. The final pass "under pressing" to one of the attackers is executed by an ACM. A goal is scored when it is directed towards the goal in a single touch after the pass from the ACM
7.	A small-sided game of $n \times n$ involving four "neutral" players on two full-size goals within a scaled-down pitch. A fundamental requirement is the swift tactical and strategic maneuvering of players and the ball across the entire playing field. Emphasis is placed on ball possession and the relocation of the ball into potentially perilous positions for the opposing team's goal. A goal is recognized when it is executed directly towards the goal in a single touch following a pass from the ACM
8.	An $n \times n$ small-sided match with goalkeepers involving four "neutral" players, two positioned behind each goal, on two full-sized goals located within the penalty area. A key requirement is the swift tactical and strategic movement of players and the ball across all playing zones. Emphasis is placed on ball control and the prompt transfer of the ball into opponent-threatening playing regions. A goal is considered valid if it is scored in one touch following a pass from the ACM
9.	A small-sided game of $n \times n$ dimensions, involving one goalkeeper stationed across two large goals positioned at the center of the pitch. Each goal lies behind the other. Emphasizing rapid tactical and strategic movements of both players and the ball across all playing zones, the objective is to maintain control of the ball and swiftly advance it into high-threat areas near the opponent's goal. A successful goal is credited when the ball is directed towards the goal within a single touch following a pass from the ACM
10.	An $n \times n$ small-sided game with one goalkeeper covering the one full-size goal. Breaking through the two lines of defensive formation of the opponent's team. A key requirement is the quick tactical and strategic maneuvering of players and the ball across all areas of gameplay. Possession of the ball and swift transition of the ball into threatening zones towards the opponent's goal. A goal is considered valid when scored with a single touch following a pass from the ACM. Following offensive tactical and strategic plays, the teams switch roles
11.	An 11-a-side match on two large goals on one half of the pitch. Key requirements include quick tactical and strategic player and ball movement across all areas of play. Maintaining ball possession and swiftly moving it into areas threatening the opponent's goal. The crucial final pass under pressure to a forward is executed by an attacking midfielder. A goal is awarded when a one-touch shot is aimed at the goal following a pass from the attacking midfielder

These tasks describe the elements of the game of ACM, according to an algorithm using technical, tactical and strategic tasks.

Participants

Thirty official matches were played by footballers ($n = 23$) who played in the position of the attacking central midfielder. They were footballers of the student's team of Ivan Boberskyi Lviv State University of Physical Culture (further – the University). They were representatives of youth teams of FC Lviv (Lviv, Ukraine) and FC Karpaty (Lviv, Ukraine) at the club level. The vast majority of these youth elite players were graduates of the Lviv Football Academies. As well as children and youth football school of the FC Karpaty (Lviv, Ukraine).

Detailed testing of the proposed approaches was carried out in the course of official matches of the University team. The aimed at developing game and combination thinking in the process of tactical and strategic actions of attacking central midfielders. These matches were part of Ukrainian National Football Championship among the teams of higher educational institutions in the seasons 2014–2023. The tournament was held under the auspices of the All-Ukrainian Students Football Association.

Statistical Analysis

All obtained data were statistically processed using the STATISTICA 10.0 for Windows software package. The significance level was set at $\alpha = 0.05$. The data is represented as the mean average \pm standard deviation (SD). The relation between basic characteristics was estimated using the Brave-Pearson correlation coefficient.

Informed consent

Informed consent has been obtained from all individuals included in this study. The participants have been informed of the experimental design and were made aware about monitoring training process and tests. They have been also informed of the potential implications, risks, and benefits of the research.

Results

Quantitative indicators of ACM tactical and strategic interactions with other roles were analyzed. First of all, the tactical scheme $1 + 4 + 2 + 3 + 1$ was studied. The data of ACM interactions with players of other roles are schematically shown (see Figure 2).

Figure 2 show how in different schemes and variants of the game ACM most interacts in the game (exchanging passes). It was interacting with the players of the attack (RW, LW, CF) and the central zone (CM) (11–15%). The lower level of interacts with central and flank players of defence (RCB, LCB, RL, and LL) (8–9%). The ACM interaction with the goalkeeper (GK) had least level of during the game (3%).

Depending on the game situation, tactical and strategic necessity any player can be in the central part of the pitch. However, the ACM is directly responsible for the effectiveness of offensive tactical and strategic interactions of the team.

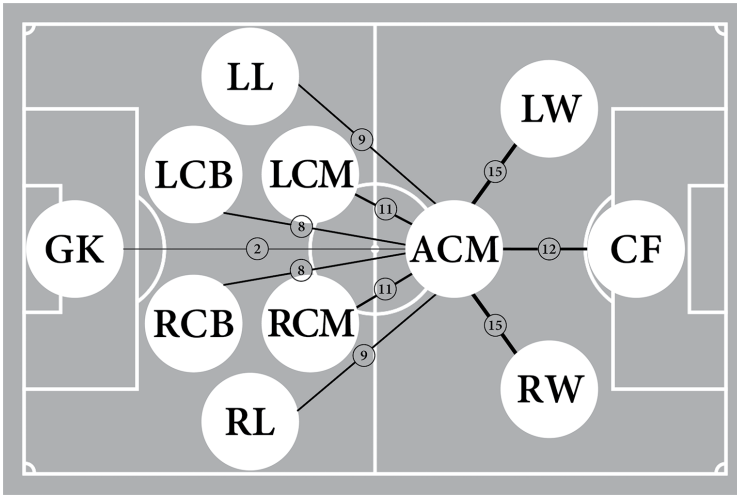


Figure 2 Passes from and to the ACM to and from other players during the game “first number” (in %)

Note: ACM – attacking central midfielder, GK – goalkeeper, RCB – right central back (defender), LCB – left central back (defender), RL – right lateral, LL – left lateral, RCM – right central midfielder, LCM – left central midfielder, RW – right-winger, LW – left-winger, CF – central forward.

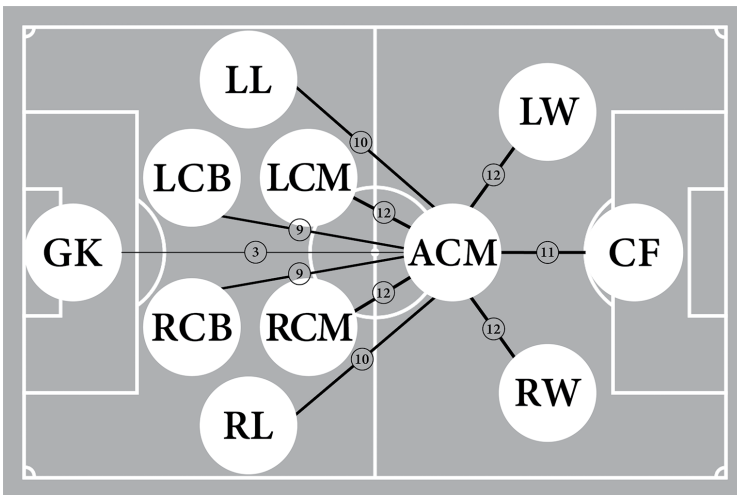


Figure 3 Passes from and to the ACM to and from other players during the game “second number” (in %)

Note: ACM – attacking central midfielder, GK – goalkeeper, RCB – right central back (defender), LCB – left central back (defender), RL – right lateral, LL – left lateral, RCM – right central midfielder, LCM – left central midfielder, RW – right-winger, LW – left-winger, CF – central forward.

Playing the “first number” involves mainly conducting offensive tactical and strategic actions. The game of the “second number” provides a significant emphasis on the successful defence (see Figure 3).

Table 2 Correlations between testing indicators and the number of goals scored in the opponents' goal

Seasons and results	Testing indicators	The special training			The general training				
		Dribbling (sec*)	Passing (points)	Shooting (points)	Long jump (sm)	High jump (sm)	30 m sprint (sec*)	“Zig-zag” (sec*)	7 × 50 m shuttle run (sec*)
2014/2015 (Group Stage)		-0.03	0.08	0.05	0.11	0.04	0.50	0.12	0.01
2015/2016 (Final four)		-0.11	0.06	-0.12	-0.12	0.05	0.23	-0.10	-0.14
2017/2018 (Final four)		-0.12	-0.04	0.15	0.29	-0.05	0.07	0.48	-0.08
2018/2019 (Final four)		-0.10	-0.03	0.11	0.23	-0.01	0.03	0.46	-0.07
2022/2023 (Final four)		-0.11	-0.01	0.12	0.25	-0.03	0.05	0.44	-0.09

Note: Positive correlations express better test performance with higher percentage of predicted; * = $p < 0.05$

The materials in Figure 3 show how in different schemes and variants of the game ACM most often interacts in the game (exchanging passes). It was interacting with the players of the attack (RW, LW, CF) and the central zone (CM) (11–12%). The lower level of game contacts with central and flank players of defense (RCB, LCB, RL, and LL) (8–9%). The ACM interaction with the goalkeeper (GK) had least level of during the game (2%). Table 2 present the results of correlations between testing indicators and the number of goals scored in the opponents' goal (see Table 2).

Table 2 presents correlations between the percentage of testing indicators and the number of goals scored. The goals scored were taking in the opponents' goal in the Championship of Ukraine among student's teams. The study also revealed that quantitative indicators of successful ACM actions had great importance:

- Central area actions: 3.5 ± 0.8
- Opponent's half: 11.3 ± 3.2
- Long passes: 2.1 ± 1.9
- Cross/back passes: $2.3 \pm 0.3 / 1.0 \pm 0.7$
- Short/medium forward passes: $14.5 \pm 1.2 / 12.9 \pm 1.2$
- Back passes: 5.3 ± 2.1
- Cross passes: 11.3 ± 1.1

Discussion

The ACM is the playmaker, characterized by vision, anticipation, agility, and courage (Prača et al., 2017). He dictates attack directions, creates effective passes, and often determines scoring chances (Mackenzie & Cushion, 2013).

The most important indicators of ACM performance include:

- Accurate passes (80.9 ± 14.7 per game, $p \leq 0.05$)
- Assists ($0.36\text{--}0.71$ per game, $p \leq 0.01$)
- Chances created ($0.35\text{--}0.80$ per game, $p \leq 0.01$)
- Progressive passes ($3.95\text{--}5.45$ per game, $p \leq 0.05$)
- Goals scored ($0.35\text{--}0.56$ per game, $p \leq 0.01$)

Experts highlight ACMs as “creative depth dispatchers” acting from deep tactical structures, orchestrating attacks, creating scoring chances, and finishing themselves when necessary.

Indicators of ACM competitive activity include:

- Total contribution
- Chances created
- Passing accuracy (%)
- Assists
- Goals
- Successful take-ons (%)
- Shot accuracy (%)

Players with these qualities complement each other on the pitch, combining defensive and offensive game intelligence.

Conclusions

Modern football requires flexible, dynamic tactical and strategic concepts in an ever-changing environment. Innovative strategic thinking is key at professional, student, and youth levels.

Individual tactical and strategic actions of ACMs are subordinated to team play, but improvisation remains essential, adding tactical surprise and disorienting opponents.

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SOCIAL SKILLS OF UNIVERSITY STUDENTS IN THAILAND AND LATVIA: RESULTS OF A SURVEY

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ABSTRACT

The role of the university is to educate and train professionals to meet the changing demands of the labour market. Industry 5.0, which characterises the current labour market, emphasises the human centre, and social skills are increasingly recognized as critical competencies enabling individuals to work effectively in complex, interconnected environments. The objective of this study is to analyse Thai and Latvian students' social skill development with the help of a self-response Social Skills of University Students (SSUS) questionnaire and find the most important factors in it. The research was carried out in 2023–2024 in Thailand and Latvia. The SSUS questionnaire consisted of 58 statements. A five-point Likert scale for student response was used, and descriptive and conclusive statistics methods were used to determine central tendencies of social skill development. The participants were 955 students of both genders from 15 universities across Thailand and 154 students from the Riga Stradinsh University, Latvian Academy of Sport Education. Cronbach's Alpha of the Thai scale was 0.91, of Latvian – 0.90. Using exploratory factor analysis six factors characterizing social skills were revealed: Self-responsibility skills, Social relationship skills, Self-awareness skills, Teamwork-building skills, Social networking skills and Communication skills. A list of statements with loadings > 0.40, is the same in both countries. Moreover, in Social-relationship skills both countries included the statements "I believe that honesty is the foundation of trust" and "I listen and ask to understand others' advice and suggestions". Thai female students had higher all six social competencies/skills than male students with one exception – Thai male students were more skilled in social networking. In Latvia insignificant differences in strategy use between genders were found – females tended to use them more, Year 4 students were found to use more strategies than Year 1 and Year 2 students, full-time students – more than part-time ones, but no differences were found in social strategy use among sports industry qualifications.

Keywords: *higher education institutions (HEI)s, Latvia, social skills, Thailand*

Introduction

The university should educate and train professionals to meet the changing demands of the labour market. The undergraduate students should have different social skills in order to satisfactorily deal with the demands of various environments.

In professional context social skills are associated with higher professional success and greater achievement, as well as better developed professional leadership. Regardless of them, social skills are reported to foster better physical well-being. Social competence is increasingly recognized as a predictor of a list of public health outcomes, including education, employment, criminal activity, substance use, mental health, well-being and higher quality of life in general (e.g., Jones et al., 2015; Conley et al., 2015; Lopes, 2015; Khampirat et al., 2024).

Social skills are identified as pivotal employability skills for graduates, and they extend beyond the confines of academic knowledge, playing an instrumental role in shaping successful trajectories (Thomas, 2023). Social skills impact graduates' ability to navigate a rapidly evolving professional landscape, the capacity to motivate others leads to effective team collaboration and leadership, and the ability to build and maintain relationships is needed in networking and collaboration attempts. The evolving landscape of work and career trajectories underscores the enduring relevance of social skills, positioning them as a linchpin in the paradigm of contemporary education and employability (Ćurlin et al., 2020; Khampirat et al., 2024).

In the European Union (EU) context, the correlation between transversal skills and employability is significant. The EU places great importance on ensuring the employability of a digitally skilled workforce as a vital objective for promoting its growth. In a more digitalised world, new ways of thinking will result in changes in the labour market and society, and people must be able to move from one job to another. Transversal skills encompass such soft skills as flexibility, adaptability, and interpersonal abilities, enabling individuals to solve problems, communicate and collaborate efficiently and effectively in teams.

Tadger et al. (2018) presented the first results of a study to determine the most important social skills of students in higher education. The social skills most cited by the participants were “politeness”, “confidence and self-esteem”, “respect for other points of view”, “ability to communicate well with others” and “help others”. At the end of the previous century, Goleman (1995) defined soft skills as *emotional intelligence*.

However, the question remains – what do they characterize and how to develop them? Robles (2012, p. 457) argues that soft skills refer to “traits, attitudes and behaviours” and are “intangible, nontechnical, personality specific skills that determine one’s strength as a leader facilitator, mediator and negotiator”.

Soft skills can also be categorized as “personal qualities” and “interpersonal skills” (Schulz (2008, p. 146). Bailley and Lene (2013) also included emotional skills within their definition of soft skills, along with behaviour, psychological and relational skills. Relational skills, such as being able to communicate effectively as well as an ability to

interact with others with empathy and enthusiasm also suggest “emotional qualities” of soft skills (Bailey & Lene, 2013, p. 81).

Kim, Erdem, Byun, Jeong (2011) tap into skills at a personal level suggesting that soft skills incorporate ethics, tolerance, amiability and responsibility. Such “intrapersonal qualities” as “one’s ability to manage oneself” are also linked with interpersonal abilities such as “how one handles one’s interactions with others” (Laker & Powell, 2011, p. 113). Rauen (2001) mentions that social competence incorporates self-confidence, empathy, communication skills, willingness and ability to cooperate, and ability to deal with conflict. Self-confidence, meaning being able to assess one’s own strengths and weaknesses, is close to self-awareness, which entails ability to reflect on oneself. Empathy implies being able to understand other people, including their thoughts and actions. Communication focuses on verbal and non-verbal communication, being able to rightly interpret the communication of another person. This also includes such skills as being able to see and cope with problems and misunderstandings. Willingness and ability to cooperate entails ability to be a team member, trying to achieve common goals, and reach a compromise. The ability to deal with conflicts means being able to face and mediate them neutrally, or, in the case when one cannot be neutral, refer to an advisor.

Baker and O’Brien (2017) propose a promising categorization of social skills into “personal qualities” and interpersonal skills (Schulz, 2008, p. 146). Bailey and Lene (2013) also included emotional skills within their definition of soft skills, along with behaviour, psychological and relational skills. Relational skills, such as being able to communicate effectively as well as an ability to interact with others with empathy and enthusiasm also suggest “emotional qualities” of soft skills (Bailey & Lene, 2013, p. 81).

Importantly, Seal et al. (2006) argues, social intelligence can be taught and acquired over time through experience. Laker and Powell (2011) emphasize that making a clear distinction between soft skills and hard skills is critically important because soft skills require different training methods to those employed when training for hard skills.

Merriam & Leahy’s (2005) recognize that the transfer of soft skills to the workplace is often difficult to achieve. Developing these skills requires practice and investment (Heckman & Kautz, 2012), and research about the circumstances of this transfer is scarce (Lake & Powell, 2011). Employers tend to assume that soft skills are innate, and they intend to leave the task of developing them to the employees themselves (Bailey & Lene, 2013). Baker & O’Brien (2017) suggest that a promising way to develop soft skills in university courses are outdoor activities.

Social skills in sports industry

Social competence in European sports industry was thoroughly studied by Baker et al. (2014), who concluded that sport and recreation employers and employees evaluated highly all employability skills, rating higher than others such inner factors as ability and willingness to learn, energy and passion, teamwork and cooperation, and communication.

Greek (Tsitskari, Goudas, Tsalouchou & Michalopoulou, 2017) subsample of employers provided similar results, main factors being: Professional Behaviour & Development, Leadership & Influence, Problem Solving, Organization & Time Management, Communication Ability and (Inter)Personal skills. Tsitskari et al. (2017) reported that all factors were highly rated by the employers, and there were no differences between industry sectors. In our opinion, Tsitskari et al. (Tsitskari, Goudas, Tsalouchou & Michalopoulou, 2017) Communication Ability and Problem Solving are in line with two factors, distinguished by Rauen (Rauen, 2001) – Communication and ability to deal with conflicts; Tsitskar’s et al. (2017) (Inter)Personal skills are in line with two Rauen factors – self-confidence and empathy. Tsitskari et al. (2017) has no doubt that by knowing the skills expected by employers, universities may enhance the graduates’ employability through better aligning undergraduate programs with industry needs.

These generic skills are essentially important for sport organizations, as they deal with different target groups with diverse psychological or physiological parameters. One specific finding was that sport employers evaluated Leadership skills as the least important of the competences expected. Baker et al. (2014) also concluded that Leadership was one of the skills and attributes that sport employers in Europe assess as slightly less important.

Baker et al. (2014) results showed no effect of the employment sector on employability skills. Minten & Forsyth (Minten & Forsyth, 2014) emphasize that sports graduates develop careers in a wide range of occupational areas – (PE teachers, sport trainers, outdoor recreation, etc.) and outside (e.g. physiotherapy, army, civil servants, etc.) of sport. Consequently, sport HEIs should reinforce their graduates with a range of social skills that will enable them to thrive in a variety of working environments and career areas (Minten & Forsyth, 2014).

Social skills for sport coaches and managers

Rauen (Rauen, 2001) reminds that ideally, the socially competent coach should also be a role model through his behaviour. He emphasizes that social skills require broad knowledge and experience, and all of them can be successfully trained. Moreover, these skills are topical not only in coaching, but also, for example, in management. No successful manager can do with specialist knowledge alone.

A study in Germany (Thiel et al., 2005/06) makes recommendations for the development of a curriculum for teaching social competence within coach training. They suggest further expansion of social science subject areas and an integration of training content in the coach training, relate knowledge to its application. Paar & Frei (2019/2020) reflect on social skills of teachers and trainers, implementing this education. The authors emphasize that adult educators should organize learning in a socially and professionally responsible manner, foster the development of learner potential, offering learning opportunities.

Thiel et al. (2005/06) are sure that the key to sporting success in top-level sport is social competence, representing a “skill mix” to which can be assigned such special communicative characteristics as communication skills, the ability to accept criticism,

the ability to deal with conflict and leadership skills, as well as such inner personality factors as charisma and knowledge of human nature. However, the situational context is also important, in elite youth sports – the ability to manage the social environment, while in the area of team sports – the ability to lead groups and promote team building. The authors also define social competence as a multifaceted means of problem solving. Communication requires consideration of the specific identity and individuality of the communication partner also in terms of age and gender and common cultural and social background. The focus in terms of regulating conflicts is primarily on managing potential conflicts. Finally, the authors acknowledge the fact that progress in medical and training science performance management is reaching its limits, therefore, specific social skills of coaches are an important potential for further improvement.

Apitzsch (2012) focuses on coaches and sports managers in professional team sports. The author concludes that nowadays coaches also take on a managerial role in their work. Apitzsch used the Heyse and Erpenbeck 64 sub-competencies competency atlas for examining the competencies of coaches and sports managers. Top performers are distinguished particularly through personal competencies, and social competencies will become even more important in the future. For coaches and sports managers, mobility is replaced by flexibility. The emphasis on networking in the context of relationship management is appropriate for both groups. For trainers, there are coaching skills instead of consulting skills and motivation skills instead of optimism/enthusiasm.

Social skills for recreation specialists and sports (PE) teachers

Baker & O'Brien (2017), speaking about skills and abilities of outdoor activity facilitators (recreation specialists), emphasize emotional perception, management and processing, as well as interpersonal connection and communication. Harun and Salamuddin (2014) indicate that exposure to outdoor education activities have a significant impact on subjects' social skills, namely, on the aspects of leadership, academic, personality and interpersonal relationships. Collaborative problem-solving requires clear communication, and a cohesive group is better equipped to face challenges. Karisman (2022) reminds that outdoor education, in which both recreation specialists and sports (PE) teachers can be engaged, can improve students' social skills, which will be very important and useful to easily adapt to the environment both with human beings and with the nature. To develop these skills in others, PE teachers and recreators need to possess them themselves.

Methodology

To identify the most essential factors in student reported soft skills, exploratory and confirmatory factor analysis with Principal Component Analysis as an extraction factor was carried out. Factor analysis was started with Kaiser (1974) suggestion that KMO > .9 were marvellous, in the .80s, meritorious, in the .70s, middling, in the .60s, mediocre, in the .50s,

miserable, and less than .5, unacceptable. Hair et al. (2010) suggest accepting a value > 0.5 . Values between 0.5 and 0.7 are mediocre, and values between 0.7 and 0.8 are good.

Using Kaiser's criterion, factors with an eigenvalue of more than 1.00 shall be retained. Another criterion is image factoring or Scree test – looking for break in a line or change of direction, and retaining all of the factors above (Pallant, 2020). After finding the number of factors, rotation will be used to obtain a simpler solution. Oblique (Oblimin) and orthogonal (e.g. Varimax) rotations was performed, and “the clearest and easiest one” were reported (Pallant, 2020, p.183).

In Thailand, exploratory factor analysis of university student social skills SUSS questionnaire with 58 items was carried out. In Latvia, confirmatory factor analysis of sport student social skills was employed. In Thailand, six factors were selected, namely – self-responsibility, social relationship, self-awareness, teamwork-building, social networking, and communication skills (Khampirat et al., 2024). In Latvian research, the same SUSS questionnaire was used, confirmatory factor analysis was employed, and in line with Thai research six most important factors were selected.

Moreover, descriptive and conclusive statistics was applied to find confirmed differences in soft skill reported use between different country, study program, study year, study form – full and part time students, and gender students.

Participants

Thailand

From Thailand, there were 955 participants from 15 universities, presenting a diverse demographic profile: 20% were males and 80% – females, their ages ranging mostly from 19–22 years. Most reported GPAs between 2.51 and 3.50 (58%), with the largest groups majoring in Business Administration/Management (32%) and Marketing (29%). About 41% were final-year students, reflecting academic maturity. Parents generally had low educational backgrounds, with nearly three-quarters having only primary or secondary education.

Latvia

The participants were 154 Latvian higher education institution (HEI) male and female students, both in full- and part-time Bachelor in Sport Science programs, Year 1 to Year 5 students, having chosen the following sports industry qualifications – sports coach, sports manager, sports (PE) teacher, and recreation specialist.

65 were males, 78 females, and 11 did not state their gender. 19 represented Year 1, 61 – Year 2, 20 – Year 3, 48 – Year 4, 1 – Year 5 and 5 missed to indicate this feature. 95, in their turn, were full time, 54 – part time students, and 5 students did not indicate their form of study.

120 students reported that one of their two qualifications was a sports coach, 27 did not have this qualification, and 7 did not answer this question. 62 students chose a sports manager as one of their two qualifications, 83 did not do it, and 9 did not answer the question. A sports (PE) teacher is one of two qualifications for 98 participants, 48 students

do not have it, and 8 failed to respond. A recreator is one of two qualifications for 9 participants, 136 students do not have it, and 9 did not answer this question. The study was conducted in conformance with research ethics procedures, as confirmed by the Human Research Ethics Committees of the universities involved in the study (see the Ethics Committees' statements further down below).

Results

Thailand

Descriptive statistics

The descriptive results of the 59 SOCS items indicate that students generally rated their competencies positively, with most average scores between 3.7 and 4.5.

Problem-solving and analytical skills were rated relatively high, such as “assessing situations, identifying problems, and evaluating solutions” ($M = 3.84$, $SD = 0.82$), “recognizing dimensions of a problem and identifying root causes” ($M = 3.81$, $SD = 0.82$), and “analyzing possible solutions quickly” ($M = 3.92$, $SD = 0.84$). These results suggest students feel fairly confident in their critical thinking abilities.

Teamwork and interpersonal competencies were among the strongest areas. High ratings were reported for “working well with other students and team leaders” ($M = 4.16$, $SD = 0.82$), “caring about other people’s feelings” ($M = 4.35$, $SD = 0.77$), “complimenting others’ accomplishments” ($M = 4.52$, $SD = 0.72$), and “thinking that helping each other benefits society” ($M = 4.48$, $SD = 0.74$). These scores highlight strong empathy, cooperation, and social responsibility.

Communication skills showed mixed results. While students rated themselves moderately on “communicating easily and effectively with others” ($M = 3.95$, $SD = 0.85$) and “listening to understand instructions and others’ viewpoints” ($M = 4.14$, $SD = 0.79$), lower scores were found for “presenting work clearly and confidently” ($M = 3.65$, $SD = 0.95$) and “especially speaking English in front of the public” ($M = 2.96$, $SD = 1.24$). This indicates that oral English proficiency and presentation skills are key areas for improvement.

Self-awareness and responsibility were rated positively. Students agreed with statements such as “being true to their own values” ($M = 4.37$, $SD = 0.79$), “believing honesty is the basis for trust” ($M = 4.48$, $SD = 0.76$), and “taking full responsibility for actions” ($M = 4.29$, $SD = 0.79$). These results suggest strong ethical and self-regulatory tendencies.

Motivation and persistence also emerged as strengths, with students endorsing items like “working hard to secure a better future” ($M = 4.02$, $SD = 0.89$) and “believing hard work will pay off” ($M = 4.19$, $SD = 0.85$).

However, some emotional regulation items revealed greater variability. For example, “mood predictability received lower ratings” ($M = 3.56$, $SD = 1.12$), suggesting less consistency in emotional stability compared with other areas.

Overall, students demonstrated strong empathy, responsibility, and teamwork skills, alongside moderate problem-solving ability. The main developmental needs appear in

English communication, public speaking, and emotional regulation, which showed lower averages and higher variability compared with other competencies.

Factor analysis

In Thai research six factors were selected, having similar factor loadings. They were Self-responsibility skills, Social relationship skills, Self-awareness skills, Teamwork-building skills, Social networking, and Category of Communication. For all six factors standardized factor loadings were determined.

Self-responsibility skills, measured by 21 item (standardized factor loading or standardized regression weight was 0.949*) can be characterized by, for example, such statements as *I analyse possible solutions quickly to select the most appropriate one, I have learnt about myself and how I see the world, I welcome suggestions for improvements from my team.*

Eight items focus on Social relationship skills (factor loading 0.977*) – *I care about other people’s feelings, I believe honesty is the basis for trust, I listen and ask questions in order to understand instructions and other people’s points of view,* to name just some of them.

A few examples of statements about Self-awareness skills (ten items, factor loading 0.993*) are *I worked hard in university to improve myself as a person and I decide to do things on the spur of the moment.*

In the category of Teamwork-building skills (five items, factor loading 1.000*) fell the following statements – *I can lead a team work at university or workplace, I can assess situations, identify problems and evaluate solutions and I recognize the many dimensions of a problem and can determine a root cause.*

The category of Social networking (factor loading 0.961*) comprises ten statements, among them – *I prefer using social media sites to attending social gatherings, I can use social media sites for strengthening interpersonal relationships, I can use social media sites to become more sociable.*

The category of Communication (factor loading 0.979) assembles four statements, among them – *My moods are predictable, I can speak, listen, read and write English clearly, I am feeling more optimistic and positive than usual.*

Table 1 Independent t-test. Differences in strategy use for genders

Social competencies/skills	male	female	male	female	t-test
	M	SD	M	SD	
Self-responsibility skills (SRS)	3.96	0.60	4.06	0.59	-2.13*
Social relationship skills (REL)	4.06	0.61	4.16	0.62	-1.99*
Self-awareness skills (AWR)	3.31	0.79	3.41	0.76	-1.597
Teamwork-building skills (TWB)	4.19	0.59	4.33	0.54	-3.10**
Social networking skills (NET)	3.77	0.68	3.74	0.69	0.61
Communication skills (COM)	3.79	0.62	3.91	0.61	-2.47*

Note. *p < .05. **p < .01

The independent t-test results (Table 1) indicate significant gender differences in several areas of social competencies. Female students scored significantly higher than males in self-responsibility skills ($p < .05$), social relationship skills ($p < .05$), teamwork-building skills ($p < .01$), and communication skills ($p < .05$). However, no significant gender differences were found in self-awareness or social networking skills. Overall, the findings suggest that female students tend to employ interpersonal and collaborative strategies more frequently than male students.

Latvia

Descriptive and conclusive statistical analysis

Maximum mean value of strategy use is 4.47, minimum – 2.54, the distribution of other values is shown in Figure 1.

S_vid is over 4.0 for the following statements – *I can work well with fellow students and teams, I am happy and appreciative of others’ successes, I think that helping each other is beneficial to society, I can create positive interactions with the people I work with, I am someone who values time, I believe that honesty is the foundation of trust, If I want something, I have to work hard to get it, I am responsible for everything that comes from my actions, I am mindful of my behaviour from start to finish.*

S_vid is less than 3.10 for such items as *I like to use social media to join social gatherings, I can act as a mediator in conflict situations, and I decide to do things immediately.*

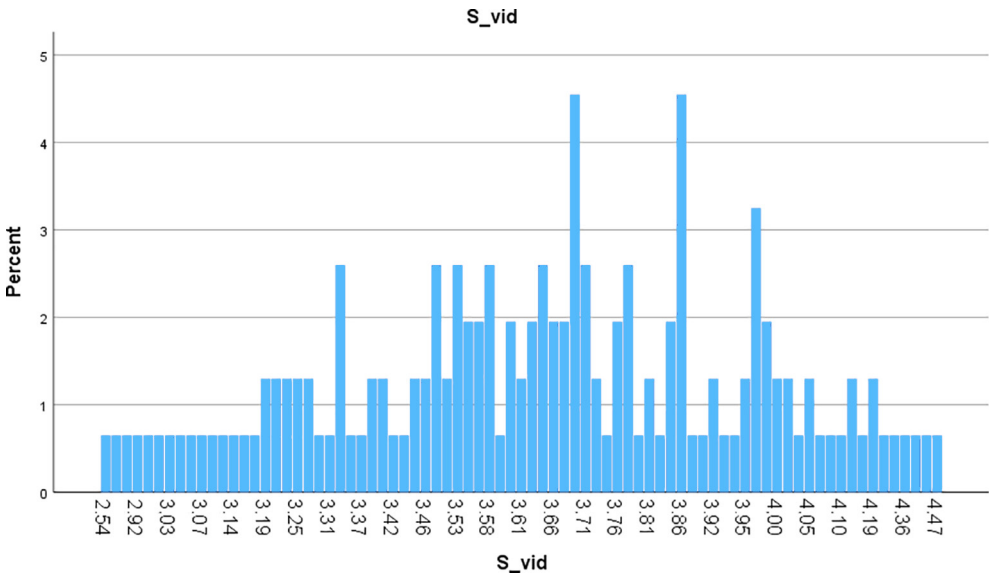


Figure 1 Mean values of strategy use

Conclusive statistics

Mann-Whitney test was employed to find differences in strategy use between genders. Small ($z = 0.51$) not statistically significant difference was found between males and female mean values of strategy use, females tended to use them more. The test revealed also small differences in strategy use from one study year to another. Year 2 students (61) have higher use of social strategies than Year 1 students (19). The difference is small $z = -1.56$, and year 4 students (48) have higher use of social strategies than Year 1 students (19). The difference is small $z = -1.00$, both differences are not statistically significant. The same test proved that full-time students (95) have higher use of social strategies than part-time students (54), the difference being small ($z = -0.63$) and not statistically significant. Moreover, there were no differences in social strategy use among sports industry qualifications.

Factor analysis

To identify the most essential factors, confirmatory factor analysis with Principal Component Analysis as an extraction factor was carried out. Using Kaiser's criterion, factors with an eigenvalue of 2.00 were retained. Scree plot was also used to find change in line direction. These considerations yielded six factors.

The Kaiser-Meyer-Olkin (KMO) index, measuring the sampling adequacy, was 0.90, and Bartlett's test of sphericity, examining whether the correlation matrix was an identity matrix and statistically significant, it was $= 0.00$, i.e. < 0.05 . These statistical values supported the use of CFA in this study (Hair et al., 2010).

Initial eigenvalues of six factors were higher than 2. Both Oblimin and Varimax rotations were carried out, reported Varimax rotation was reported. Varimax rotation explained 40.50 of variation. Scree Plot showed a more pronounced drop at the 6th factor.

The 1st factor was labelled Self-responsibility skills. To it belonged, among others, such factors as *I often learn about myself in order to co-create the world*, and *I analyze possible solutions and quickly break them down to the most suitable one* with loadings > 0.4 .

The 2nd factor was named Social-relationship skills. To it belonged, for example, such statements – *I believe that honesty is the foundation of trust*, and *I listen and ask to understand others' advice and suggestions* with loadings > 0.4 .

The 3rd factor was Teamwork building skills. With loadings > 0.4 , there were such statements as – *I can work well with fellow students and teams*, *I can work well in a team, both on and off campus*, and *I am happy and appreciative of others' successes*.

The 4th factor was Social networking skills, including such items as *I can use social media to get along with people more easily*, *I can use social media sites to become more sociable*, *I can use social media to stay informed about current events in society*, *I can use social media to strengthen relationships between people*, *I can use social media sites for strengthening interpersonal relationships*, and *I like to use social media to join social gatherings*, with loadings > 0.40 .

The 5th factor was Self-awareness, incorporating inter alia the following items – *I feel confident in everything I do*, *I do everything I do with willingness*, with loadings > 0.40 .

The 6th factor was Communication skills. It included, to mention just some, the following items – *My emotions are predictable*, and *I can speak, listen, read and write English clearly so that others can understand*, with loadings > 0.40 .

A list of statements with loadings > 0.40 is the same in both countries. For example, in Social-relationship skills factor, both countries have included the statements *I believe that honesty is the foundation of trust*, and *I listen and ask to understand others' advice and suggestions*.

Conclusions

The study highlights the need for higher education institutions to focus on developing soft skills to better meet the demands of the labour market, ultimately preparing students to thrive in a rapidly interconnected and complex environment.

The research focuses on social skills of students in Thai and Latvian HEIs, needed for future employment. In Thai research, six factors, characterizing social skills were selected: Self-responsibility skills, Social relationship skills, Self-awareness skills, Team-work-building skills, Social networking, and Category of Communication. The fact that all of them have similar loadings means that they contribute significantly to the overall social skills construct, therefore, improvements in any of these areas can substantially boost an individual's social competence. The same factors were identified in Latvian research. A list of statements with loadings > 0.40 , is the same in both countries.

The study presents the level of the development of social skills according to a self-reported SSUS questionnaire. The most highly developed individual social skills in Latvian context, among others, were – *I can work well with fellow students and teams*, *I am happy and appreciative of others' successes*, *I think that helping each other is beneficial to society*, *I can create positive interactions with the people I work with*, *I am someone who values time*, *I believe that honesty is the foundation of trust*, *If I want something, I have to work hard to get it*, etc.

Descriptive statistics showed that Thai female students have all the six social competencies/skills higher than male students with one exception – Thai male students are more skilled in social networking. However, this result is not statistically significant. In Latvian context, the Mann-Whitney test was employed to find differences in strategy use between genders. Small ($z = 0.51$) not statistically significant difference was found between males and female mean values of strategy use, as females tended to use them more. The test also revealed small differences in strategy use from one study year to another. Year 2 students (61) have higher use of social strategies than Year 1 students (19). The difference is small $z = -1.56$, and year 4 students (48) have higher use of social strategies than Year 1 students (19). The difference is small $z = -1.00$, so that both differences are not statistically significant. The same test proved that full-time students (95) have higher use of social strategies than part-time students (54), the difference being small ($z = -0.63$) and not statistically significant. No differences were found in social strategy use among sports industry qualifications.

The knowledge of strong and weak aspects of student soft skills could help study program developers and university teachers to rely on the already developed ones and clearly specify and urge efforts in enabling the student with the least developed ones to be valuable asset in labour market.

Discussion

The exploratory factor analyses of university student social skills, elaborated in Thailand, had revealed six factors. Confirmatory factor analysis, carried out in Latvian context, revealed the same six most developed social skills, however their sequence was slightly different.

In Thai research, six factors, were: Self-responsibility skills (1), Social relationship skills (2), Self-awareness skills (3), Teamwork-building skills (4), Social networking (5), and Communication skills (6).

In Latvian research, the sequence of six factors in the order of the factor with the largest loading to the ones was: Self-responsibility skills (1), Social-relationship skills (2), Teamwork building skills (3), Social networking skills (4), Self-awareness, (5) Communication skills (6).

In the Thai context, self-awareness is more developed than in Latvian a HEI (numbers 3 and 5). In Latvian context Teamwork-building skills are more developed than in a Thai HEI (numbers 3 and 4). In the Latvian context, social networking is more developed than in a Thai HEI (numbers 4 and 5).

However, Latvian research showcased significantly fewer participants. Consequently, it can be predicted that exploratory factor analysis might yield less factors than six. Therefore, we can suggest in further investigations to apply exploratory factor analysis instead of the confirmatory one.

Ethics statement

Thailand

This research upholds the ethical standards governing human subjects, aligning with principles such as the Declaration of Helsinki, the Belmont Report, the CIOMS Guideline, and the ICH GCP. Approval of conducting the study was obtained from the Human Research Ethics Committee of Suranaree University of Technology (No. EC-64-128). The participants were adequately informed about the study verbally before they provided their consent. The participants independently submitted their responses to questions that assessed their social competencies. The consent process was integrated at the beginning of the online survey, requiring the participants to explicitly agree before proceeding, thereby ensuring their voluntary engagement in the study.

Latvia

Approval of the Ethics Committee of the Latvian Academy of Sport Education received on May 31, 2024, Atz. Nr. 8, Prot. Nr. 9. The study was conducted following the legal regulations on upholding ethical standards in scientific research.

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Thailand

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BODY COMPOSITION OF PHYSIOTHERAPY STUDENTS WITH DIFFERENT LEVELS OF PHYSICAL ACTIVITY

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Abstract

Our study investigated the impact of non-professional sports activities on body composition of physiotherapy students. The study involved 102 physiotherapy students (aged 17–18): untrained (M1, F1) and non-professionally trained (M2, F2). Non-professional training lasted up to 5 hours weekly at a moderate activity level. We observed the larger muscle component in group M2 (42.51%), than in group M1 (40.18%, $p \leq 0.05$), and in F2 (29.56%) than in F1 (28.33%, $p \leq 0.05$). The fat component was larger in group M1 (18.74%), compared to group M2 (16.30%, $p \leq 0.05$), and in F1 (30.82%) compared to F2 (27.58%, $p \leq 0.05$). The highest percentage of individuals with normal body mass was found in groups M2 and F2 – 84.2% and 75.0%, respectively. There were no individuals with underweight in group M2, as well as no individuals with overweight in group F2. There was no significant difference in the visceral fat content between groups of trained and untrained students. We found, that increase in body mass index is accompanied by an increase in body fat content and a decrease in the percentage of skeletal muscle tissue in the bodies of both untrained and trained students. We conclude that extracurricular non-professional sports activities lasting up to 5 hours per week induce significant changes in the content of muscle and adipose tissue, and do not affect the visceral fat content in the body of physiotherapy students.

Keywords: *non-professional training, body mass index, muscle component, fat component, underweight, overweight*

Introduction

Modern data analyses reveal a troubling trend among university students: rising obesity rates, unfavorable shifts in body composition, particularly increased fat percentage and reduced lean body mass – and a general decline in physical fitness (Murphy et al., 2021; Pan et al., 2022). These concerns are especially relevant for physiotherapy students, whose future professional activities demand a high level of physical fitness (Bento et al.,

2022; Gallo et al., 2021). Some studies indicate that physiotherapy students are experiencing increases in body fat content, BMI, and waist circumference during their academic study (Kochman et al., 2022). They exhibit the highest body mass and fat levels compared to peers in other disciplines (Popławska et al., 2020). Mahajan and Rawat (2020) reported that 84.71% of physiotherapy students demonstrated poor physical fitness, with only 1.24% achieving a high average level. Notably, none of the participants reached good or excellent fitness standards. This data highlights the need for targeted interventions to improve body composition and physical performance within physiotherapy students.

One contributing factor to increased fat accumulation and decreased fitness levels among students could be the limited opportunities for physical activity and the insufficient inclusion of structured exercise within academic programs (Pan et al., 2022). Several studies highlight a low or inadequate level of physical activity among students (Aars et al., 2019; Murphy et al., 2021), which may lead to suboptimal fitness levels and increased adiposity (Popławska et al., 2020). Therefore, it is essential to explore strategies that promote health, fitness level, and body composition of students, particularly within physiotherapy education.

One promising approach to improving body composition and increasing physical fitness levels of students is participation in non-professional extracurricular sports activities. Numerous studies have demonstrated the positive effects of such activities on body composition (Bento et al., 2022; Kęska et al., 2022; Kutseryb et al., 2022; Yarizadeh et al., 2021) and physical fitness (Kochman et al., 2022; Lan et al., 2022; Pan et al., 2022). For example, engaging in at least 250 minutes of physical activity per week has been shown to reduce body weight, body fat, increase muscle mass, and lower BMI (Badau et al., 2021). Physically active students consistently exhibit lower body fat percentages and fat mass compared to their inactive peers (Kęska et al., 2022). Moderate-to-vigorous activity improves body composition by reducing fat and increasing lean mass (Bento et al., 2022). Increasing vigorous physical activity was significantly associated with reduced body fat percentage in biomedical students (Gallo et al., 2021). Students involved in sports training show significantly better body composition, including lower fat and higher lean mass (Kutseryb et al., 2022). The aerobic, resistance, and combined exercises significantly reduce subcutaneous abdominal fat in adults (Yarizadeh et al., 2021). Exercise groups reached significant improvements in maximal oxygen uptake and a decrease in body fat percentage compared to the control group (Lan et al., 2022). Some studies have also shown positive effects of physical activities on aerobic capacity, muscular endurance, and overall physical fitness levels specifically among physiotherapy students (Aars et al., 2019). Although the literature broadly supports the benefits of physical activity, few studies have focused specifically on physiotherapy students. Kochman et al. (2022) found significant correlations between general physical fitness and body composition metrics such as fat percentage, fat mass, and fat-free mass in this population.

Despite the clear advantages of regular exercise, the current curriculum for students in the “227 Physiotherapy, Occupational Therapy” program includes only two hours of physical activity per week – far below the World Health Organization’s recommendation

of 300 minutes of moderate-intensity or 75–150 minutes of vigorous-intensity aerobic activity. This gap highlights the need for additional opportunities to engage in physical exercise beyond the formal curriculum. Given this context, we hypothesize that physiotherapy student who engage in self-selected, non-professional extracurricular training, may experience measurable improvements in body composition. Therefore, the aim of this study is to evaluate the impact of such extracurricular physical activity on the body composition of physiotherapy students, offering insights into its potential role in addressing curricular limitations and promoting health-related outcomes.

Methodology

Participants. Our sample consisted of 102 male and female students without chronic illnesses from Ivan Bobersky Lviv State University of Physical Culture (LSUPhC). Participants were recruited through university-wide announcements and voluntary sign-up. Inclusion criteria required students to be enrolled full-time in their first year of study and free of chronic medical conditions. All participants provided informed consent to participate in the research. The studies adhered to the established standards of the Helsinki Declaration regarding ethical principles for conducting research involving human subjects.

The male students were classified into Group M1 (44 persons), comprising individuals who do not regularly engage in any physical exercises, and Group M2 (19 persons), consisting of students who participate in non-professional sports. Female students were also classified into two groups – Group F1 (27 persons), comprising untrained individuals, and Group F2 (12 persons), consisting of individuals who participate in non-professional sports. Information regarding extracurricular physical activity was gathered through a questionnaire, wherein students detailed the type, duration, and intensity of their physical activities, if applicable. Students were assigned to either the M2 or F2 group if they engaged in regular non-professional sports activities for a minimum of six months, averaging up to five hours per week at a moderate intensity level. Students who were not engaged in any regular extracurricular physical activity, or whose activity did not meet the above criteria, were assigned to groups M1 or F1 accordingly.

Study organization. We have used the anthropometric methods for measuring height, employing a metallic stadiometer for accuracy. We also conducted bioimpedance analysis using the Omron BF-511, measuring various parameters including body weight, body mass index (BMI), percentage of body fat and skeletal muscle mass, basal metabolic rate, and visceral fat level. The Omron BF-511 device measures the total electrical resistance of the body by applying an electric current of a specific frequency and intensity. The examination is painless and non-invasive, and the procedure does not take long. It can be applied to subjects of both sexes and of all ages. All the methods are standard practices, and have been extensively described in scientific literature and in our previous publications (Kutseryb et al., 2022).

Statistical analysis. The obtained data were processed using the statistical functions of the "Microsoft Excel 2010" and "Origin 2018" software. The normality of the empirical

data distribution was verified based on the Shapiro-Wilk criterion. Since the distribution did not differ from normal, the arithmetic mean and standard error of the mean ($M \pm SD$) were analyzed, and the probability of the difference between groups was determined based on Student's t-test.

Results

Firstly, we compared the basic anthropometric and bioimpedance parameters between untrained male and female students (groups M1 and F1), and male and female students who engage in non-professional training (groups M2 and F2). Statistical analysis of the data (Table 1) indicates that there is no significant difference in body weight, height, and basal metabolic rate between the groups ($p > 0.05$).

We also analyzed the distribution of individual BMI values in all groups (see Table 1) according to the World Health Organization's obesity classification scale (WHO, 2018). The highest percentage of individuals with normal body weight was found in the groups of trained students M2 and F2 – 84.2% and 75.0%, respectively (see Table 1). At the same time, in group M2, there were no individuals with underweight, and in group F2, there were no individuals with overweight. It can be assumed that additional physical activities contribute to optimizing BMI values in students.

We found significant differences in the values of body fat and skeletal muscle content between groups of students with different levels of physical activity (see Table 1). Specifically, in group M2, the percentage of body fat was by 13% lower than in group M1 ($p < 0.05$). The percentage of skeletal muscle tissue in the bodies of students in group M2 was 6% higher ($p < 0.05$) than in group M1. There was no significant difference in the visceral fat content between groups of trained and untrained students. It was found that

Table 1 The results of anthropometric and bioimpedance analysis of LSUPhC physiotherapy students with different levels of physical activity ($M \pm SD$)

Parameter	Male students		Female students	
	Group M1	Group M2	Group F1	Group F2
Age, years	17.30 \pm 0.60	17.32 \pm 0.49	17.42 \pm 0.51	17.56 \pm 0.54
Height, cm	178.6 \pm 8.11	178.15 \pm 6.24	166.19 \pm 4.30	166.83 \pm 6.44
Weight, kg	70.76 \pm 10.50	71.74 \pm 7.83	60.13 \pm 10.00	56.77 \pm 6.88
BMI, kg/m ²	22.64 \pm 3.57	22.34 \pm 1.90	21.67 \pm 3.30 [#]	20.35 \pm 1.84*
UW students, %	4.8	0.0	18.5	25.0
NW students, %	78.6	84.2	66.7	75.0
OW students, %	11.9	15.8	14.8	0.0
FC, %	18.74 \pm 7.52	16.30 \pm 4.41*	30.82 \pm 6.25	27.58 \pm 1.16*
MC, %	40.18 \pm 5.34	42.51 \pm 2.67*	28.33 \pm 1.89	29.56 \pm 1.98*
Basal metabolism, kcal/day	1702.28 \pm 235.84	1673.37 \pm 105.59	1343.19 \pm 132.30	1293.08 \pm 83.18 [#]

Note: BMI in groups of underweight (UW), normal weight (NW), and overweight (OW) were < 18.5 kg/m², 18.5–24.9 kg/m² and > 25 kg/m² respectively; FC – fat component, MC – muscle component, * – $p \leq 0.05$, # – ≤ 0.10

the percentage of body fat in group F2 was 11% lower ($p < 0.05$) than in untrained individuals in group F1. At the same time, the content of skeletal muscle tissue in female students of group F2 was 4% higher ($p < 0.05$) than in group F1. The visceral fat content in the bodies of female students in groups F1 and F2 did not significantly differ. Thus, physical activities at the level of non-professional training induce significant changes in the content of muscle and fat tissue and do not affect the visceral fat content in the bodies of students.

Analysis of the morphological characteristics of students with normal weight, overweight, and underweight (according to BMI) revealed certain differences between these groups (Table 2, Table 3).

Table 2 Features of anthropometric and bioimpedance parameters of male physiotherapy students with different BMI levels ($M \pm SD$)

Variable	Group	Nutritional status (BMI level)			<i>p</i>		
		Underweight (UW)	Normal weight (NW)	Overweight (OW)	UW-NW	UW-OW	NW-OW
Height, cm	M1	187.00 ± 9.17	177.32 ± 6.26	181.00 ± 15.53	> 0.05	> 0.05	> 0.05
	M2	–	177.94 ± 6.53	179.33 ± 5.13	–	–	> 0.05
Weight, kg	M1	62.13 ± 9.10	67.46 ± 6.23	90.49 ± 14.56	> 0.05	< 0.05	< 0.05
	M2	–	69.09 ± 6.69	81.87 ± 4.05	–	–	< 0.05
BMI, kg/m ²	M1	17.69 ± 0.92	21.52 ± 1.70	28.71 ± 3.54	< 0.05	< 0.05	< 0.05
	M2	–	21.81 ± 1.38	25.47 ± 0.57*	–	–	< 0.05
FC, %	M1	10.00 ± 0.28	16.53 ± 5.72	30.73 ± 5.03	< 0.05	< 0.05	< 0.05
	M2	–	15.55 ± 4.38	20.53 ± 0.12*	–	–	< 0.05
MC, %	M1	44.85 ± 0.35	41.62 ± 3.36	33.31 ± 3.85	< 0.05	< 0.05	< 0.05
	M2	–	42.92 ± 2.72*	40.33 ± 0.40*	–	–	< 0.05

Note: see Table 1.

Table 3 Features of anthropometric and bioimpedance parameters of male physiotherapy students with different BMI levels ($M \pm SD$)

Variable	Group	Nutritional status (BMI level)			<i>p</i>		
		Underweight (UW)	Normal weight (NW)	Overweight (OW)	UW-NW	UW-OW	NW-OW
Height, cm	F1	163.80 ± 3.70	167.06 ± 4.28	165.25 ± 4.79	< 0.05	> 0.05	> 0.05
	F2	163.67 ± 11.06	167.89 ± 4.62	–	> 0.05	–	–
Weight, kg	F1	46.86 ± 3.60	60.44 ± 6.06	75.33 ± 6.31	< 0.05	< 0.05	< 0.05
	F2	48.37 ± 5.55	59.57 ± 4.71	–	< 0.05	–	–
BMI, kg/m ²	F1	17.24 ± 0.59	21.59 ± 1.56	27.55 ± 1.00	< 0.05	< 0.05	< 0.05
	F2	18.03 ± 0.38	21.12 ± 1.39	–	< 0.05	–	–
FC, %	F1	21.66 ± 3.46	31.49 ± 3.46	39.25 ± 4.19	< 0.05	< 0.05	< 0.05
	F2	23.30 ± 2.86*	29.00 ± 3.34*	–	< 0.05	–	–
MC, %	F1	29.44 ± 1.50	28.41 ± 1.58	26.63 ± 2.80	> 0.05	< 0.05	> 0.05
	F2	28.77 ± 3.45	29.82 ± 1.46*	–	> 0.05	–	–

Note: see Table 1.

An increase in BMI is accompanied by an increase in body fat content and a decrease in the percentage of skeletal muscle tissue in the bodies of both untrained and trained students. Based on this data, it can be assumed that weight gain and BMI increase in different groups of studied students occur through the mechanism of accumulating body fat, regardless of additional physical activities. However, male students with overweight who also engage in training (group M2) have lower body fat content and higher skeletal muscle content compared to untrained students (group M1, $p < 0.05$).

Similarly to the case of male students, in groups F1 and F2, an increase in BMI is accompanied by an increase in the percentage of body fat (see Table 3). However, the differences in skeletal muscle content between groups with the BMI gradations are somewhat less pronounced. Surprisingly, in the group of female students with underweight, a higher percentage of body fat is found in the group physically active female students (group F2) compared to untrained individuals (group F1).

Discussion

The initial impetus for our research was the problem identified by many authors concerning negative changes in body composition and physical fitness among students (Aars, et al., 2019; Kutserby et al., 2022), including those studying physiotherapy (Kochman et al., 2022; Mahajan & Rawat, 2020; Popławska et al., 2020). This issue is significant not only because of the potential adverse effects on the health and quality of life of the students but also due to the necessity for physiotherapists to maintain an adequate level of physical fitness to perform their professional duties effectively.

Studies examining male and female students (Khan & Sheth, 2019) with varying levels of physical activity (high, moderate, satisfactory, and low) have demonstrated a relationship between physical activity levels and the fat and muscle components of body composition. While an increase in daily physical activity intensity can lead to a reduction in body fat content (Gallo et al., 2021), several studies (Lan et al., 2022; Murphy, et al., 2021; Yarizadeh et al., 2021) indicate that aerobic exercises are the most effective for reducing fat content. Additionally, various studies support the impact of physical exercise on lean body mass and fat content (Kęska et al., 2022) as well as the muscle content in students' bodies (Lan et al., 2022).

The positive impact of increased physical activity on body mass index (BMI) has been observed in younger individuals from 15 years old (Bento et al., 2022), as well as in students (Aars et al., 2019; Mahajan & Rawat et al., 2020). However, some studies (Mahajan & Rawat et al., 2020) found no correlation between BMI and the Physical Fitness Index (PFI) among physiotherapy students. At the same time, other authors discovered that among students with higher physical activity levels, aerobic capacity, endurance of trunk muscles, and overall physical fitness, there was no significant difference in BMI values (Khan & Sheth, 2019). This suggests that the BMI parameter does not always reflect the physical fitness level of students, making the analysis of body composition a more preferable method.

That is why we have studied the effect of extracurricular activities, selected according to students' preferences, on the BMI and body composition of physiotherapy students.

Our analysis showed that only 30% of male students and 31% of female students enrolled in “227 Physiotherapy, Occupational Therapy” is additionally engaged in non-professional sports at a moderate level for up to 5 hours per week. These physical activities led to a 7% decrease in BMI among female students, a reduction in the fat component by 11–13%, and an increase in the muscle component by 4–6% among both male and female students. Other studies have found that students engaging in physical activity for at least 250 minutes per week leads to a decrease in body weight by 1–8%, body fat by 12–16%, an increase in muscle tissue by 8–11%, and a reduction in BMI by 9–10% (Badau et al., 2021). Similarly, participating in physical exercises three times a week for 8 weeks resulted in a 6% reduction in fat mass, a 2% increase in skeletal muscle mass, and a 4% decrease in body fat percentage (Lan et al., 2022). Therefore, the outcomes achieved through specifically selected physical exercises are comparable to the results we obtained.

Several publications also compare body composition and physical fitness indicators of students with different levels of physical activity. For instance, when physical activity is higher by 13%, the BMI is found to be lower by 8%, body fat decreases by 11%, and VO_{2max} increases by 31% (Murphy et al., 2021). Similarly, changes in BMI (-1%) and body fat (-21%) were observed when comparing physically active students (engaging in 5 to 7 hours per week of swimming, running, games, martial arts) with students not engaged in any structured activity (Kęska et al., 2022). Furthermore, an increase in muscle tissue content by 2% and a decrease in fat content by 8% were observed in students with a higher (by 55%) level of physical activity (Popławska et al., 2020).

Therefore, the results we obtained, along with data from other studies, indicate the potential benefits of using extracurricular physical activities to correct body composition and enhance physical fitness and aerobic capacity in physiotherapy students. Promising directions for further research include studying the impact of specific types of extracurricular activities, which can only be achieved by increasing the number of participants in the study.

Conclusions

The extracurricular non-professional sports activities lasting up to 5 hours per week induce significant changes in the content of muscle and adipose tissue, and do not affect the visceral fat content in the body of physiotherapy students. It can be assumed that weight gain and BMI increase in different groups of studied students occur through the mechanism of accumulating body fat, regardless of additional physical activities or nutritional status.

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THE RELATIONSHIP BETWEEN COMMUNICATION STRATEGIES AND SATISFACTION IN COUPLE RELATIONSHIPS

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ANNOTATION

The aim of the study is to investigate the relationship between the use of functional and dysfunctional communication strategies in relationships and their association with relationship satisfaction. The research examines whether the use of specific communication strategies is related to couple satisfaction and identifies the nature of these relationships. The research instrument consists of a demographic section and two surveys measuring overall relationship satisfaction and communication strategies or habitual patterns in romantic relationships. Satisfaction with relationships was measured using the Partner Satisfaction Score. The method was adapted into Latvian (Mizāne, 2006). The survey contains 35 statements. The preference for different communication strategies in the partnership was measured using the updated version of the Communication Patterns Questionnaire (Crenshaw et al., 2017). The initial adaptation of the questionnaire for the purposes of the study was carried out as part of this work. The study sample consists of 840 respondents. The results confirm that the use of functional or constructive communication strategies in relationships is positively related to couple satisfaction, while dysfunctional, partner-demanding/self-withdrawal, and self-demanding/partner-withdrawal communication strategies are negatively related to couple satisfaction. Regression analysis revealed that relationship satisfaction in this sample was predicted by the use of constructive communication – the more constructive communication is used in interactions, the more satisfied individuals are with their relationships.

Keywords: *communication strategies, constructive communication, dysfunctional communication, relationship satisfaction, self-demanding/partner withdrawal, partner-demanding/self-withdrawal*

Introduction

The research focuses on whether the use of certain communication strategies is related to couple satisfaction and identifies the nature of these relationships.. It is widely believed that the quality of communication in a relationship significantly impacts each individual's assessment of satisfaction, which is why much of the advice given in clinical work with couples is based on this research evidence. The pattern-based communication

strategies of couples have been a focus of research because they predict important aspects of the relationship, such as intimacy, satisfaction, and termination of relationship. The overall quality and health of relationships is considered an important component of an individual's overall health (Bodenmann et al., 2014). In previous decades, research has found that negative communication strategies (avoidance, criticism, threatening, blaming, defending) are associated with greater relationship dissatisfaction, whereas positive communication strategies (engagement, mutual discussion, listening) are positively correlated with greater relationship satisfaction, both in everyday communication and during conflict (Johnson et al., 2021). As relationship satisfaction is considered one of the cornerstones of a happy life and the foundation of relationship longevity, exploring this relationship is essential to strengthen the research base for necessary interventions and to make improvements in clinical practice (Jolin et al., 2022; Karney & Bradbury, 2020).

In research conducted over the past 10 years, contemporary researchers have identified significant gaps and inaccuracies in previous conventional wisdom about the relationship between communication strategies and relationship satisfaction. They challenge several concepts by arguing that assumptions based on research from previous decades are misleading, incomplete, or possibly irrelevant (Barton et al., 2017; Karney & Bradbury, 2020). Some researchers have found that the results of studies on relationship improvement and satisfaction among couples who make communication improvements are quite contradictory. For example, developing communication skills does not necessarily lead to a long-term increase in relationship satisfaction, and using negative communication in a relationship does not always result in a long-term decrease in relationship satisfaction (Karney & Bradbury, 2020; Qingyin et al., 2023). Despite the considerable body of research that unequivocally states that the use of dysfunctional communication strategies in relationships reduces relationship satisfaction (Gottman et al., 1998; Jolin et al., 2022), some contemporary researchers argue that every communication strategy has its benefits and drawbacks in relationships. They suggest that these strategies are more influenced by contextual aspects than by the use of a general categorization of communication strategies (Karney & Bradbury, 2020; Qingyin et al., 2023). In light of the above, the paper tests the previously identified relationship between the use of communication strategies and satisfaction in couple relationships. This will either confirm the proposed hypothesis or provide an additional empirical basis for the patterns found by researchers in the last decade, should the hypothesis not be confirmed.

Research hypothesis. The use of positive or constructive communication strategies in partnerships is positively correlated with relationship satisfaction, while the use of negative or dysfunctional communication strategies in partnerships is negatively correlated with relationship satisfaction.

Additional questions

1. What is the relationship between relationship satisfaction and demographic characteristics such as relationship length, relationship format, presence of children, and level of education?

2. What is the relationship between the choice of communication strategies in a relationship and demographic characteristics such as relationship length, relationship format, presence of children, and level of education?
3. Which communication strategies and demographics best explain and predict relationship satisfaction?
4. What is the relationship between certain dysfunctional communication strategies and relationship satisfaction?

Participants or sample. 840 respondents in a relationship for at least one year, 18–60 years old, women and men.

Communication in relationships

Over the past decades, research on improving relationships has emphasized communication as one of the central concepts, particularly the impact of paired communication strategies on relationships. Past research has shown that communication in partnerships is significantly related to relationship satisfaction. Therefore, research on this concept, particularly on the ability to resolve conflicts, is considered essential for increasing satisfaction in couple relationships (Gottman & Levenson, 2000; Jolin et al., 2022; Qingyin et al., 2023).

Communication is seen as a process of exchanging information. This process involves not only the exchange of verbal and non-verbal information, but also thinking, expressing thoughts, listening, interpreting, understanding perceived information, and responding to information or behavior (Guerrero et al., 2018). Communication also has a major impact on each individual's subjective evaluation of relationships (Qingyin et al., 2023).

Research on communication in relationships distinguishes between *interpersonal communication*, defined as “the exchange of non-verbal and verbal messages between people, regardless of their relationship” (Guerrero et al., 2018), and *relational communication*, or “the part of interpersonal communication that focuses on the expression and interpretation of messages in close relationships. Relationship communication covers a wide range of interactions, from important relationship messages to everyday life interactions” (Guerrero et al., 2018). As the term “communication strategies” in the context of relationships is not defined by a single, unified definition, a collection of several interdisciplinary definitions is used to define it. The definition used in linguistic communication research effectively illustrates the overall process of communication strategies. However, for the purposes of this study and in adapting it to relational communication, communication strategies refer to positive (functional or effective) and/or negative (dysfunctional or ineffective) forms of interaction.

Although communication consists of many dimensions (Baucom et al., 2015; Bokoch, 2018), researchers suggest that communication behaviors can be categorized into two groups of strategies: functional (positive) and dysfunctional (negative) strategies. Constructive communication (positive strategy) and demanding/avoidant behavior (negative strategy) are broadly associated with different relational functioning variables

(Crenshaw et al., 2017). Functional communication is the ability to share one's thoughts, feelings, needs and wants in a way that is understood by others, active engagement, two-way discussion, expressing opinions, listening and collaborative communication. Dysfunctional or negative communication strategies include criticizing the partner, not making concessions, avoiding communication, defending instead of listening, putting pressure, and blaming oneself and the other (Jitaru, 2020; Leuchtmann et al., 2019).

Communication strategies and general communication difficulties

Research has extensively explored the link between a couple's communication strategies, or paternal communication strategies, and their impact on the relationship both in the moment and over the long term. In the majority of studies, positive couple interactions are positively associated with relationship quality, while negative interactions (criticism/defensiveness, demanding/withdrawal) are negatively associated with relationship quality (Jolin et al., 2022). Some studies have argued that both spouses' (wife and husband) satisfaction with the wives' communication strategies predicted their own satisfaction with the relationship (Yoo et al., 2013). Research on relationships and their functioning focuses on the difficulties and conflicts that arise in relationships, which are resolved through mutual communication using various communication strategies. In contemporary rhetoric, the formula for relationship success is often discussed and emphasized as the ability to resolve difficulties through negotiation or effective communication: "the idea that successful couples resolve their problems through negotiation has remained central to our understanding of the functioning of marriage" (Lavner et al., 2014). Various sources point to additional conditions that can negatively affect interpersonal communication, such as individual childhood experiences, attachment styles, physical and mental health, misunderstanding the other person's words or motives, inability to understand and accept the other person's views and perspectives, cultural differences, language barriers, false assumptions and stereotypes, secrecy, unpleasant remarks and behaviors, and poor listening skills (McNulty et al., 2021; Righetti et al., 2022).

Different aspects of a dysfunctional communication strategy

The division of communication strategies into functional and dysfunctional strategies implies that functional communication is supportive and has a positive impact on relationships, while dysfunctional communication is harmful and has a negative impact on relationships (Karney & Bradbury, 2020). Research indicates that there is a link between couple conflict and relationship dissatisfaction, divorce, relationship violence, work performance, parenting and child-rearing. Effective conflict management is considered one of the main goals of couples therapy and relationship education (Whitton et al., 2018).

As the initial concepts of the Communication Patterns Survey used in this study are partly based on John Gottman's classification, it is important to note that Gottman categorized dysfunctional communication strategies into four types: criticism, contempt, defensiveness, and stonewalling (Gottman et al., 1998).

Although much of the research is based on these positive and negative communication strategies, which have been established over several decades, and their direct correlation with positive and negative effects on couple relationship satisfaction, recent studies have pointed to the use of these different communication strategies within a contextual framework. This approach reduces the direct impact of the distinct divisions on couple relationship satisfaction (Baucom et al., 2015; Karney & Bradbury, 2020). Similarly, current research suggests that in some situations, it may be more appropriate for an individual to express negative feelings rather than positive behaviors, as this could have a positive impact on overall relationship well-being in the long term (Baucom et al., 2015; Karney & Bradbury, 2020). During conflict, disagreement, criticism, and anger may even predict a slight increase in relationship satisfaction over time, as these behaviors allow individuals to address issues directly, facilitating desired change and more successful problem resolution (Baucom et al., 2015).

Satisfaction with couple relationships

Satisfaction with couple relationships is viewed as a subjective, global assessment of relationship quality and is an important indicator and predictor of individual well-being and life satisfaction in various types of research (Candel & Turliuc, 2019). Satisfaction with couple relationships has been a focus of researchers for several decades and has been found to be influenced by many different factors, such as an individual's personality traits (Decuyper et al., 2018), the level of intimacy in the relationship, external stressors (McNulty et al., 2021; Zainah et al., 2012), income level, education, whether or not they have children, the number of children, and more.

Previous research on couples' relationship satisfaction indicates that relationship status is a significant predictor of satisfaction, with studies showing that partners in registered relationships report higher levels of relationship satisfaction (Tan et al., 2018; Yucel, 2017). As more couples opt for unregistered cohabitation or separate households, it is important to explore the differences that have been found so far and to understand whether, in the current context, relationship satisfaction also differs between these various relationship status groups. The norms and rules are perceived to be clearer in registered relationships, but are less clear for partners in non-registered relationships and require constant revision, which can lead to conflict and disagreement, thus reducing overall satisfaction with the relationship (Yucel, 2017).

Regarding the relationship between age and satisfaction with couple relationships, a recent systematic review and meta-analysis found that satisfaction with partner relationships declines between the ages of 20 and 40, then gradually increases until age 65 and remains stable in later life. It has also been suggested that the first 10 years of a relationship are the most critical, as around the 10-year mark individuals show the lowest levels of relationship satisfaction, which may be short-lived and gradually increase up to the 20-year mark, when it may again decrease slightly (Buhler et al., 2021).

Satisfaction with couple relationships in relation to communication strategies

Despite various nuances in research methodology, a large body of research shows that communication in relationships has the most direct impact on subjective relationship evaluations (Qingyin et al., 2023) and plays an important role in the health and longevity of close relationships (Gordon & Chen, 2016; Nguyen et al., 2020). Although negative and positive communication strategies during conflict are related to long-term relationship satisfaction, couple communication is equally influenced by the individual dynamic aspects of partners' communication behavior (Leuchtmann et al., 2019).

Longitudinal studies show a stronger association between the use of negative communication strategies and satisfaction with couples' relationships, with individuals reporting higher satisfaction during periods when they used fewer negative communication strategies than usual. However, no such association between the use of positive strategies and satisfaction was found (Johnson et al., 2021). At the same time, a study on women's communication strategies and relationship satisfaction showed a significant relationship between the use of constructive communication strategies during conflict and higher couple relationship satisfaction (Jitaru, 2020).

According to some researchers, low levels of positive affect and high levels of negative affect predict decreases in satisfaction with couples' relationships over time (Johnson et al., 2021; Lavner, 2016). Some studies claim that couples who express more negative interaction strategies during the first two years of their relationship report greater unhappiness in their marriage more than 10 years later, compared to couples who initially report more positive forms of interaction. Other studies show inconsistent results regarding the general claim that negative communication is associated with changes in marital satisfaction, and suggest that conflict resolution does not necessarily predict increased satisfaction in couple relationships (Renanita & Setiawan, 2018). At the same time, other researchers suggest that both husbands' and wives' satisfaction with the wives' communication strategies (patterns) predicted their own satisfaction with the relationship (Yoo et al., 2013).

Methodology

A total of 840 respondents participated in the study, including $n = 786$ women (93.5%) and $n = 54$ men (6.5%), aged 18–60 ($M = 34.75$; $SD = 7.08$), who have been married or in an unregistered relationship for at least one year. The majority of respondents, 57.1% ($n = 480$), are in a registered relationship, while 42.9% ($n = 360$) are in an unregistered relationship, with 36.1% ($n = 303$) cohabiting and 6.8% ($n = 57$) not cohabiting. The average length of relationship in the sample is 10 years ($M = 10.63$; $SD = 7.28$), with the most represented groups being those in relationships for 4 years ($n = 55$, 6.8%) and 1 year ($n = 55$, 6.8%), followed by those with 10 years ($n = 52$, 6.2%). The majority of respondents, 64.9% ($n = 545$), have children, while 35.1% ($n = 295$) have no children. The sample was based on the principle of accessibility and data were collected electronically.

Study instruments

1. The Comprehensive Marital Satisfaction Scale (CMSS, Blum & Mehrabian, 1999), adapted for the Master's thesis (Mizāne, 2006), was used to assess each respondent's individual level of satisfaction with their partnership. The questionnaire consists of 18 statements describing the relationship positively and 17 statements describing it negatively. The internal consistency calculated for the whole sample was $\alpha = 0.94$.
2. To identify functional and dysfunctional communication styles, an initial adaptation was made to an enhanced version of the Communication Patterns Questionnaire (CPQ) (Crenshaw et al., 2017). The initial adaptation of the questionnaire involved three independent translations from English into Latvian, followed by three independent back-translations from Latvian into English. The questionnaire consists of 35 questions, which are grouped into three subscales: Constructive Communication (CC), Self-Demanding/Partner Withdrawal Communication (SelfDPartW) and Partner-Demanding/Self-Withdrawal Communication (PartDSelfW). The internal consistency scores for all subscales are above 0.7 for the adapted questionnaire in this study.
3. The questionnaires also included a demographic section, where respondents provided information on gender, age, length of relationship, relationship format (registered/unregistered), presence and number of children in the household, education level, and place of residence.

Study procedure

Potential participants were invited to complete the questionnaire online via social networking platforms (Instagram; Facebook) using the QuestionPro tool. The first part of the survey was deliberately designed to be a satisfaction survey, so that its scores would not be influenced by possible feelings that could arise when recalling situations of communication interaction. The second part included all the statements of the "Communication Patterns Questionnaire" and the final part asked respondents to provide information on demographic data.

The results show that constructive communication strategies are positively associated with satisfaction in couple relationships, while self-demanding and partner-withdrawal behaviours, as well as partner-demanding and self-withdrawal behaviours, are negatively associated with relationship satisfaction.

Results

To test the study hypothesis, Spearman correlation coefficients were calculated for the entire sample with each of the communication strategy subscales (see Table 1 for the results).

Table 1 Correlations between communication strategies and satisfaction with partnerships ($n = 840$)

Variable	Constructive communication	Self-demanding/ partner-withdrawal communication	Partner-demanding/ self-withdrawal communication
Satisfaction with the relationship	0.75**	-0.52**	-0.46**

** $p < 0.01$

Table 2 Correlations of demographic data with satisfaction with relationships and communication strategies in the full sample ($n = 840$)

Variables	Number of children	Age	Sex	Relationship length	Level of education
Satisfaction with the relationship	-0.02	-0.11**	-0.01	-0.05	0.00
Constructive communication	-0.01	-0.05	0.00	-0.08*	-0.03
Self-demanding/ partner-withdrawal communication	0.01	0.03	-0.06	0.02	0.07*
Partner-demanding / self-withdrawal communication	0.01	0.05	0.05	0.04	0.02

* $p < 0.05$, ** $p < 0.01$

To address the first two research questions, Spearman correlation coefficients were calculated between relationship satisfaction and communication strategies and selected demographic characteristics (see Table 2). The results indicate statistically significant but weak relationships between the constructs and demographic characteristics. Note that all correlation coefficients are below 0.3 ($r_s < 0.3$), indicating weak correlations that explain less than 10% of the total variance.

To answer the third research question, which communication strategies and demographics best explain and predict relationship satisfaction, a statistical regression analysis was performed using a forward selection method (see Table 3), as there was no clear predictor of the main variable.

The results of the regression analysis show that, among all the factors showing a correlation, the constructive communication strategies used in the relationship predict the most, accounting for 61.2% of the satisfaction with the couple relationship ($\beta = 0.78$, $p < 0.01$). When this factor is added to the next steps, 4 more factors are added: age of the individual ($\beta = -0.09$, $p < 0.01$), relationship format ($\beta = -0.07$, $p < 0.01$), partner-demanding/self-withdrawal (PDSW) communication strategies ($\beta = -0.06$, $p < 0.01$) and education level ($\beta = 0.04$, $p < 0.01$), this explains an additional 1.2% of relationship satisfaction, so that these 5 factors together explain 62.4% of couple relationship satisfaction.

Table 3 Multiple regression model for predicting relationship satisfaction ($n = 840$)

Independent variable	<i>B</i>	<i>B SE</i>	β	<i>F</i>	<i>R</i> ²
<i>Step 1</i>				1279.71**	0.612
Constructive communication	1.19	0.03	0.78*		
<i>Step 2</i>				648.41**	0.615
Constructive communication	1.12	0.03	0.74*		
Age	-0.18	0.07	-0.05*		
<i>Step 3</i>				441.47**	0.620
Constructive communication	1.17	0.03	0.77*		
Age	-0.26	0.07	-0.08*		
Relationship format	-2.83	1.07	-0.07*		
<i>Step 4</i>				335.23**	0.623
Constructive communication	1.11	0.04	0.73*		
Age	-0.27	0.07	-0.08*		
Relationship format	-2.92	0.84	-0.07*		
Partner-demanding/ self-withdrawal communication	-0.16	0.06	-0.06*		
<i>Step 5</i>				269.93**	0.624
Constructive communication	1.11	0.04	0.73*		
Age	-0.29	0.07	-0.09*		
Relationship format	-2.75	0.84	-0.07*		
Partner-demanding/ self-withdrawal communication	-0.16	0.06	-0.06*		
Level of education	0.98	0.49	0.04*		

* $p < 0.01$, ** $p < 0.05$

Since the results of this study show a negative relationship between overall dysfunctional communication scores and relationship satisfaction, while contemporary researchers argue that types of dysfunctional communication, such as withdrawal and direct confrontation, may have a positive relationship with relationship satisfaction, the fourth research question was addressed through an additional correlation analysis. This analysis examined selected items representing dysfunctional communication from the “Communication Patterns Questionnaire” and their relationship with relationship satisfaction, as well as an additional correlation analysis of four items that were not included in the calculation of the overall communication strategies subscales but correspond to strategies

that may positively affect relationship satisfaction. The results in this sample did not show a positive relationship; however, the “expressing emotions and logical solutions” behavioral items demonstrated medium and weak positive relationships with relationship satisfaction.

Discussion

The main aim of the study was to investigate the relationship between satisfaction with couples' relationships and the functional and dysfunctional communication strategies used within those relationships. Based on the published literature, it was hypothesized that positive or functional communication strategies would be positively correlated with relationship satisfaction, while negative or dysfunctional communication strategies would be negatively correlated with relationship satisfaction. Given that recent scientific research points to an ambiguous relationship between these communication strategies and satisfaction constructs, this paper sought to examine what this relationship is.

After data collection and analysis, the hypothesis of this study was fully confirmed. It is consistent with research conducted in past decades, which shows a direct correlation between higher relationship satisfaction and the use of functional or constructive communication strategies in partnerships, and lower relationship satisfaction for those who employ dysfunctional communication strategies. The correlations found in this study are consistent with previous literature, which indicates that positive couple interactions are positively associated with relationship quality, while negative interactions are negatively associated with relationship quality (Markman et al., 2010; Jolin et al., 2022). Specifically, negative communication strategies are linked to greater relationship dissatisfaction, whereas positive communication strategies are positively correlated with greater couple relationship satisfaction (Markman et al., 2010; Johnson et al., 2021).

On the one hand, these results reject the claims made in recent studies that certain components of dysfunctional communication may increase relationship satisfaction. At the same time, it is possible that such a relationship could not be observed in this study, as the measurement was time-locked and taken at a specific point in the individual's life. Some recent research suggests that these relationships persist over the long term, with negative communication strategies being associated with lower relationship satisfaction in the short term (Markman et al., 2010), while higher levels of negativity are linked to greater satisfaction in the long term (Johnson et al., 2021; Karney & Bradbury, 2020; Nguyen et al., 2020; Qingyin et al., 2023).

In response to the first and second research questions, all relationships were found to be statistically significant but weak. Therefore, these results should be interpreted as indicative trends rather than definitive conclusions. The results showed that respondents in a registered relationship are more satisfied with their relationship than respondents in an unregistered relationship. Although weak, these trend-level results may reflect the findings of previous studies, which suggest that factors such as receiving support from a partner for better physical and mental health, combining finances, and experiencing

physical and emotional security may contribute to higher relationship satisfaction in registered relationships (Blanchflower & Clark, 2020; Renantina & Setiawan, 2018). The results also showed a weak negative relationship between age and relationship satisfaction. As the sample of this study is 18 to 60 years old, with a mean age of 34 years ($M = 34.82$), it is possible to interpret this relationship at the trend level as part of overall life satisfaction. As most studies highlight the significant impact of relationship satisfaction on an individual's overall life satisfaction, it is worth noting one of the largest studies in recent years. This study gathered data on the relationship between age and unhappiness from nearly 14 million respondents across European countries, the USA, and 168 other countries. It concluded that there is a link between low life satisfaction and midlife, with the lowest satisfaction scores occurring around the age of 49 (Blanchflower, 2020). It is also important to consider that the average length of the relationships in this sample is 10 years, and existing research suggests that satisfaction in couples' relationships tends to decline over time. Individuals often enter relationships with a high level of positivity and enthusiasm, which gradually diminishes as the relationship progresses (Lavner et al., 2014). At the same time, some research suggests that this correlation cannot be clearly explained, as it is important to consider that couples who experience significant declines in relationship satisfaction over time are more likely to have faced stress during various life transitions (Karney & Bradbury, 2020). Although many studies have shown a negative relationship between satisfaction in couple relationships and having children, this study found a small positive correlation between relationship satisfaction and having children. This could be explained by the fact that this sample may represent a portion of the population that is managing the financial burden of raising children, rather than young parents. A large study conducted in European Union countries indicates that having children can make an individual happier if their financial situation is stable and paying bills does not impose a significant burden. The study also found that children under the age of 10 provide a greater sense of happiness than children aged 10–14, and parents are generally happier if they are under the age of 45. This study also indicated that those in registered relationships with children are happier than those in non-registered relationships with children (Blanchflower & Clark, 2020). In the light of these findings, future research should include additional control variables, such as financial situation and age of children.

The regression analysis conducted in response to the third research question revealed that among the various communication strategies and demographic characteristics, constructive communication is the most significant predictor of relationship satisfaction, accounting for 61.2% of the variance in couples' relationship satisfaction in this sample. These results are consistent with the general findings of studies on total communication as one of the most significant predictors of couple relationship satisfaction (Jitaru, 2020; Renanita & Setiawan, 2018), while differing from those studies that argue that negative or dysfunctional communication is a more significant predictor of couple relationship satisfaction than positive or functional communication (Johnson et al., 2021).

Additionally, the examination of individual dysfunctional communication strategies and their relationship with relationship satisfaction addressed the fourth research question by exploring the potential positive effects of dysfunctional communication strategies, as suggested by contemporary researchers, on couple relationship satisfaction (Karney & Bradbury, 2020). The results of this study did not support recent assumptions, as dysfunctional communication strategies such as “discussion/avoidance” and “reconciliation and avoidance or withdrawal” showed moderately strong negative associations with relationship satisfaction ($r_s = -0.15-0.44, p < 0.01$).

Several limitations should be noted when considering the results of this study. Firstly, the significantly different gender distribution of the respondents to the survey questionnaire (93.5% women and 6.5% men) in this sample should be taken into account, which does not give an equally clear picture of the gender differences in the research on this issue. Although satisfaction in couples’ relationships is generally viewed as a balance between positive and negative forms of interaction, men and women perceive their relationships differently. As a result, the factors that determine relationship satisfaction vary between samples of men and women (Jitaru, 2020). For example, in a study of couple dynamics in the choice of communication behaviour during conflict discussion, results revealed that women’s initial positive communication was associated with higher relationship satisfaction scores for both partners, a decrease in women’s negative communication increased women’s relationship satisfaction scores, while men’s assumptions about the effectiveness of their actions in understanding their partner’s feelings predicted a lower choice of negative communication strategies for men but an increase in negative communication for women (Leuchtman et al., 2019). Secondly, the study relied solely on self-assessment methods, meaning each respondent may interpret the situation being described, and the communication strategies being assessed, in very different ways. Third, it is very likely that the nuances described by contemporary researchers can only be observed in the long term, and although the study involved respondents with different, including long-term, relationship durations, it does not provide an answer to the overall impact in the long term, as it is a subjective measurement captured at a particular moment in time, without including the different aspects of relationship dynamics

In conclusion, although the results of this study align broadly with research conducted in previous decades and do not contribute new insights to more recent findings, there is a clear case for further research on this issue. Future studies should focus more deeply on the individual components of both constructs to gain a better understanding. To provide more accurate data, further research on this topic would require the development of a more nuanced instrument to measure communication strategies. This should include a more in-depth and detailed consideration of different dimensions of couple communication during measurement procedures, such as directness and the severity of issues discussed. Additionally, it would be important to examine the influence of other contextual and external factors on the communication strategies used, such as financial situation, age of children, individual stress management strategies, emotion regulation, and personality traits.

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MAPPING AI COMPETENCIES IN EDUCATIONAL POLICY DOCUMENTATION

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ABSTRACT

Artificial intelligence (AI) is transforming education worldwide, and its integration into educational frameworks is critical for preparing future generations. This research examines the representation of AI-related competencies and skills in educational policy documentations (guidelines, frameworks, visions, recommendations, etc.), focusing on their scope, depth, and implementation. The research systematically maps selected educational policy documents from Organisation for Economic Co-operation and Development (OECD) countries to identify key categories of AI-related competencies, such as technical, ethical, and usage domains, and assesses their practical guidance for educational integration. The study employs a systematic mapping methodology, enabling a detailed analysis of these frameworks to identify patterns and trends in how AI-related competencies are conceptualised and prioritised. The findings highlight notable differences in how AI competencies are included and described, emphasising certain areas while revealing potential gaps in representation across policy documentation. This analysis offers insights into the alignment of AI education initiatives with broader societal and technological needs, providing a foundation for policy recommendations aimed at enhancing AI competency development in education. By addressing these differences, the research underscores the importance of harmonising approaches to ensure equitable access to AI education and consistent development of critical competencies across nations. The study contributes to the growing importance of AI in education by addressing a critical gap in understanding how national policy documentation prioritises and supports AI-related competencies. Its findings can be relevant for policymakers, educators, and researchers striving to prepare students for an AI-driven future.

Keywords: *AI competencies, AI education policy, AI literacy development, artificial intelligence education, competency mapping, educational frameworks*

Introduction

The integration of artificial intelligence (AI) into education demands well-structured policy documentation to ensure clarity, equity, and alignment with broader educational goals. As highlighted in the AI Pioneers D5.1 Evaluation Schema (Roman et al., 2025), the effectiveness of AI in education depends not only on technological advancements

but also on the governance frameworks that shape its implementation. Without clear and unified AI policies, there is a risk of fragmented adoption across different education levels and target audiences, leading to inconsistencies in competency development. Also, policy documents that aren't clear or are too general might not give educators and institutions clear ways to put AI to use, which could lead to unfair AI integration and ethical concerns.

Existing research shows how important it is for policy documents to clearly define AI-related competencies. This way, both teachers and students can use AI technologies in a structured way. An important part of making sure everyone has equal access to AI education is making sure that national policies are in line with digital literacy standards and ethical concerns (Roman et al., 2025). Despite these critical needs, gaps remain in how AI competencies are represented in educational policies across OECD countries.

To address this gap, this study systematically maps AI-related competencies across OECD countries' national educational policy documents. The study uses a structured framework to group AI-related competencies into categories, rate their depth, and see how well they match up with target audiences, education levels, and document types. To achieve the research objective, two research questions were raised:

RQ1: How are AI-related competencies categorised and represented in educational policy documents of OECD countries, and to what extent do they offer guidance on their implementation?

RQ2: What gaps exist in the representation of AI-related competencies in educational policy documents concerning target audiences, education levels, and document types?

The results are meant to give policymakers evidence-based ideas on how to improve AI education policies, ensuring inclusive and effective AI competency development.

AI Literacy and Competency Frameworks in Education

Competencies refer to the integrated knowledge, skills, attitudes, and values necessary for effective performance in specific contexts (Mulder, 2014). In education, competencies support lifelong learning and adaptability, especially in the face of technological transformation. The rise of AI as a transformative force across sectors – education, workforce, policy, and society – requires individuals to not only interact with AI tools but to do so critically and ethically (Holmes et al., 2022; Wang et al., 2023).

In this context, AI-related competencies are essential for adapting to AI-driven innovations, enabling individuals to navigate complex systems, assess algorithmic decisions, and address ethical dilemmas (Yi, 2021). AI's integration into fields such as healthcare, finance, and education (Jiang et al., 2022) illustrates its potential to reshape professional roles, necessitating structured competency development to ensure responsible use, personalise learning, and guide ethical use (Ng et al., 2023). Students, meanwhile, require competencies that prepare them for an AI-influenced job market, fostering critical evaluation, creativity, and problem-solving (Sperling et al., 2024).

The concept of AI literacy – understanding, using, and evaluating AI technologies – has emerged as a core competency. For teachers, it supports pedagogical innovation and ethical classroom AI use; for policymakers, it ensures informed regulation; and for industry professionals, it enhances productivity and informed decision-making (Celik, 2023; Laupichler et al., 2023; UNESCO, 2021). Given AI's societal impact, developing AI-specific competencies across diverse groups is essential for inclusive, effective, and ethical technology integration. Therefore, national strategies must prioritise AI literacy to bridge current competency gaps and prepare learners and professionals for an AI-driven future.

Several international frameworks aim to support educators in developing digital competencies, yet few provide specific guidance on AI-related competencies. The DigiCompEdu Framework (Redecker, 2017) identifies 22 digital competences across six domains, including digital resources, assessment, and student engagement. Its revised version, DigiCompEdu 2.2 (Vuorikari & Holmes, 2022), acknowledges AI's growing role by addressing data literacy and AI-driven tools. However, it lacks detailed guidance on the specific AI competencies required for ethical and effective use in education.

The European Commission's Ethical Guidelines for Teachers (European Commission: Directorate-General for Education, 2022) address responsible AI use but similarly omit clear competency requirements (Ng et al., 2023). Similar frameworks from the OECD and UNESCO (2018) emphasise digital skills and data literacy but offer a limited focus on AI-specific competencies, particularly ethical use and practical integration.

National efforts also reflect this gap. In Latvia, guidelines for AI in higher education (Grūzītis et al., 2024; Puriņa-Biezā et al., 2024) offer practical recommendations but do not isolate AI competencies for professional development. As AI evolves, these frameworks risk becoming outdated, creating gaps in preparing educators for AI integration (Fernández-Batanero et al., 2022).

To support teachers in a technology-driven future, it is essential that frameworks move beyond general digital literacy to include AI-specific skills, ethical guidance, and practical application strategies and provide an opportunity to evaluate progress.

Methodology

This study employs a systematic mapping (Farias-Gaytan et al., 2022) to analyse the representation of AI-related competencies in educational policy documents across OECD countries. The methodology follows a qualitative content analysis approach (Staller, 2010) – categorising competencies, assessing document depth, and mapping them against target audiences and education levels.

The data for this study consists of official national policy documents from OECD countries, including guidelines, strategies, frameworks, recommendations, and vision papers that reference AI in education. Documents were retrieved from governmental databases, ministry websites, OECD and European Commission reports, and national AI strategies that specifically mention education. To ensure relevance, documents had to have been published within the last five years, explicitly reference AI-related

competencies, and be issued by a recognised national policy organisation or academic institution. General education policies without direct AI references, research articles, and private sector reports were excluded from the analysis.

A content analysis (Staller, 2010) was used to sort the chosen documents into groups of AI-related skills, and six key competencies were chosen from a review of the literature:

- 1) **Understanding** – Knowledge of AI principles, such as machine learning, and its implications for education (Laupichler et al., 2023; Wang et al., 2023).
- 2) **Critical Evaluation** – The ability to assess AI technology, recognize opportunities, and address risks in educational settings (Celik, 2023; Labadze et al., 2023; Wang et al., 2023).
- 3) **Ethics** – awareness of ethical concerns, including data security, biases, and responsible AI use in education (Sharples, 2023; Sperling et al., 2024; Wang et al., 2023; Yi, 2021).
- 4) **Usage** – Practical competence in applying AI tools for teaching, personalising student learning, or administrative tasks (Labadze et al., 2023; Ng et al., 2023; Wang et al., 2023).
- 5) **Awareness** – understanding AI's broader societal implications, including its effects on education and the future of work (Labadze et al., 2023; Sharples, 2023; Wang et al., 2023).
- 6) **Communication/Cooperation** – The ability to discuss AI-related issues with students, colleagues, and policymakers and collaborate on AI-driven educational strategies (Labadze et al., 2023; Ng et al., 2023).

In addition to competency classification, documents were categorised by policy type, distinguishing between guidelines, strategic frameworks, recommendations, and vision papers. The depth of AI policy integration was also assessed and classified into four levels (Viennet & Pont, 2017):

- 1) **Acknowledgment** – documents that recognise AI's importance but provide no practical guidance.
- 2) **Examples** – documents that include use cases or applications to illustrate AI's role in education.
- 3) **Strategies** – documents offering specific policy recommendations for AI competency development.
- 4) **Evaluation** – documents proposing metrics, evaluation frameworks, or accountability mechanisms for AI competency implementation.

To ensure coding accuracy, two researchers independently reviewed and categorised a subset of the documents. Cohen's Kappa (Mabmud, 2010) was used to measure the reliability between the coders. Agreement levels for key coding dimensions were 0.78 for policy depth, 0.79 for target audience classification, and 0.81 for competency mentions, reflecting strong consistency. Any discrepancies were resolved through discussion to maintain coding accuracy.

To analyse the structure and depth of AI-related competencies in educational policy documents, several comparative analyses (Pickvance, 2001) were conducted. The study

examined relationships between target audiences, document types, document depths, competencies mentioned, and education levels. The target audience was compared with the document type, document depth, and competencies mentioned, but not with the education level due to inconsistent policy specifications across different educational stages. Similarly, document type was compared with document depth but not with competencies mentioned or education level, as policies could vary in format rather than specific competency focus. The depth of documents was analysed against the competencies mentioned but not against the education level, as the depth classification did not always correspond to a specific education stage. Education level was compared with competencies mentioned to assess how AI-related competencies were integrated at different levels of education.

Descriptive statistics (Brown, 2010) were used to provide a structured summary of policy document distributions. These numbers helped figure out how often AI-related competency references, policy types, and target audiences were mentioned. This made sure that trends and gaps in AI competency representation across OECD countries could be found using data.

Results

This study analysed 43 AI-related educational policy documents from 38 OECD countries, revealing inconsistencies in AI policy presence. While 31 countries had at least one AI-related policy document, seven lacked any reference to AI in education, highlighting gaps in united education policy. Nine countries had two policy documents, while one had four, reflecting different policy approaches.

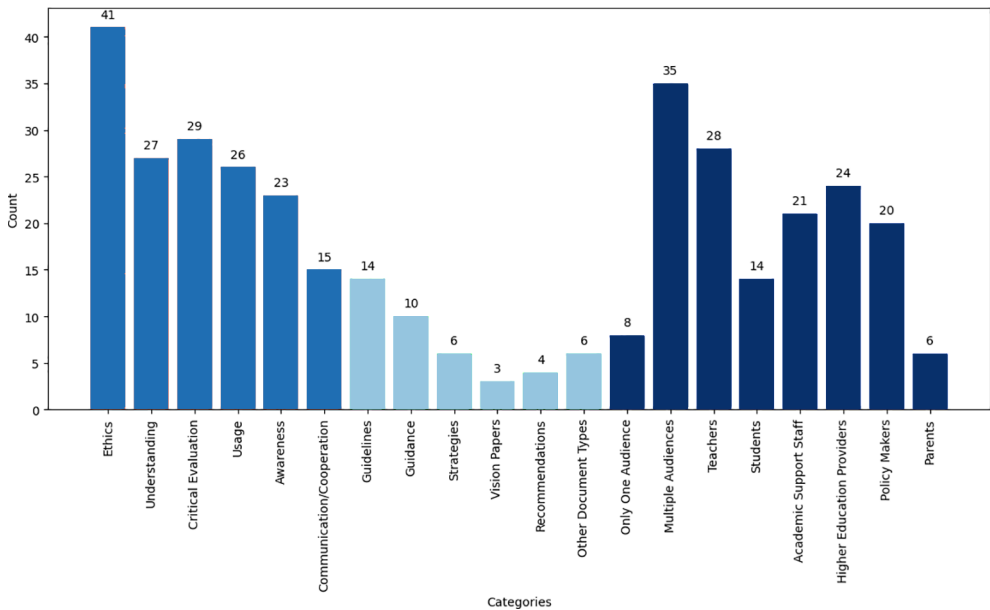


Figure 1 Descriptive Summary of AI Policy Data

Looking at document types (see Figure 1), guidelines (14) and guidance documents (10) were most common, while strategies (6), recommendations (4), and vision papers (3) were less frequent. This indicated a focus on practical implementation rather than long-term strategic planning. Target audiences varied, with teachers (28) and academic support staff (21) being the most frequently addressed groups. Higher education providers (24), policymakers (20), and students (14) were also included, while parents (6) and AI developers (5) were rarely considered. Most documents targeted multiple audiences, reinforcing a focus on educator preparedness rather than direct student engagement. Regarding policy depth, most documents provided examples (15) or strategic recommendations (17), while 12 only acknowledged AI's importance without concrete guidance. Only one document included evaluation metrics, highlighting a gap in accountability mechanisms for AI competency assessment. Competency representation was uneven. Ethics (41) was the most frequently mentioned, followed by critical evaluation (29), understanding (27), and usage (26). Communication and cooperation (15) were the least addressed, suggesting that while cognitive AI skills are well covered, collaborative AI competencies receive little attention. These findings suggest that AI education policies across OECD countries remain fragmented, with inconsistencies in policy depth, target audiences, and competency prioritisation. While ethics is a strong focus, the lack of evaluation mechanisms and limited attention to applied AI skills raise concerns about effective AI integration in education.

AI policies do not equally address all educational stakeholders, with significant differences in how target groups are prioritised and supported. The groups that get the most guidelines are students (57.1%) and academic staff (45.5%). This means that AI policies for these groups focus on general suggestions rather than structured implementation (see Figure 2).

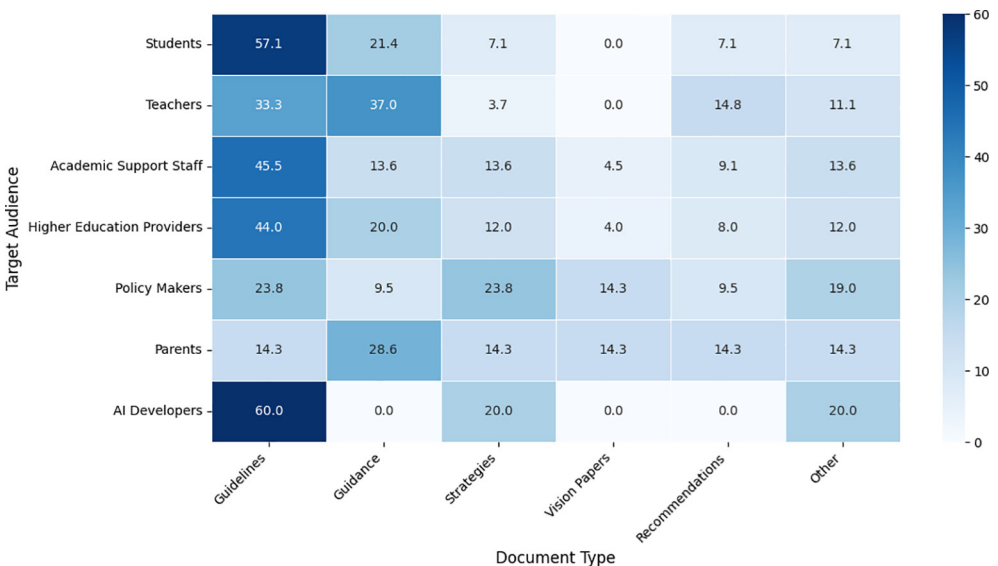


Figure 2 Comparison Between Target Audience and Document Type

Teachers, the most frequently mentioned group, receive significant guidance (37%), but only 3.7% of strategy documents, highlighting a lack of concrete AI integration plans.

Higher education providers (44%) and policymakers (22.7%) receive the most vision papers (13.6%), aligning with their long-term policy development roles rather than direct classroom application. Parents are primarily addressed through guidance policies (33.3%), focusing on AI awareness over structured support. AI developers mostly receive guidelines (60%) but no guidance, indicating general recommendations rather than instructional frameworks (see Figure 2). This suggests that AI policies provide broad guidance but lack structured implementation, particularly for teachers and students, leaving gaps in AI integration and evaluation.

Acknowledgement-based policies, which recognize AI’s role without clear implementation, are most common for policymakers (35%) and higher education providers (33.3%), reflecting their role in high-level discussions (see Figure 3). There are 14 mentions of students in all documents, but half of these (50%) include structured strategies. This suggests that when policies talk about students, they tend to give specific plans instead of general statements.

Despite being the most frequently mentioned audience (28 policies), teachers have low representation in example-based policies (25%) and minimal evaluation (3.6%), indicating a gap in classroom guidance and accountability. Policy documents targeting AI developers most frequently provided strategic guidance (80%), meaning they receive structured recommendations rather than practical examples (see Figure 3). Across all groups, evaluation is missing, reinforcing a lack of accountability measures in AI education policies.

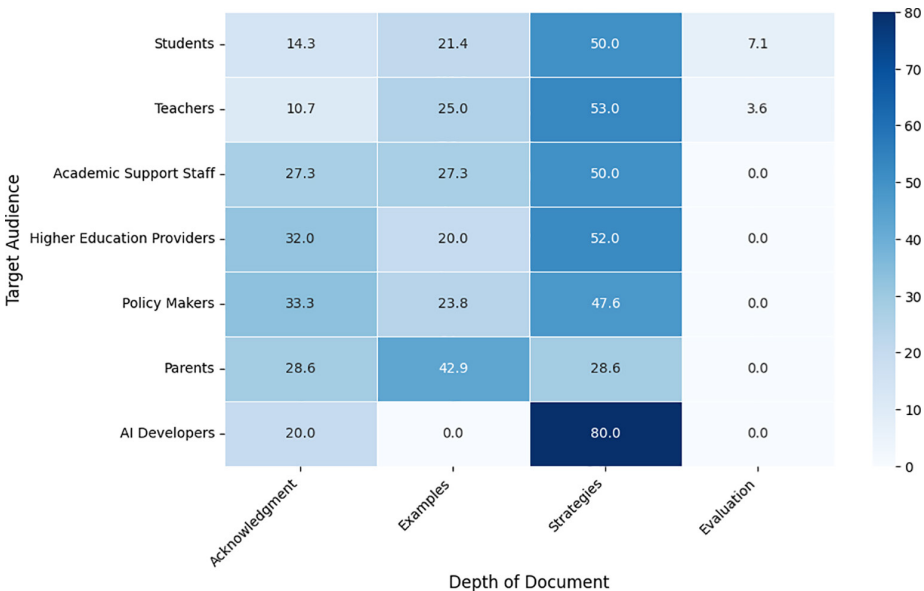


Figure 3 Comparison Between Target Audience and Document Depth

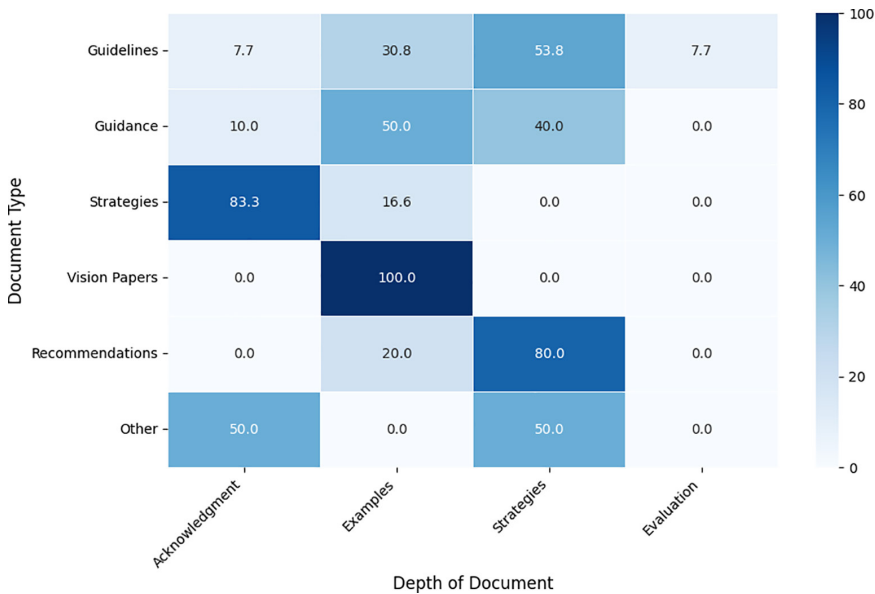


Figure 4 Comparison Between Document Type and Depth of Document

Looking at the type of documents shows that guidelines (53.8% of the time) and recommendations (80% of the time) most often have strategic suggestions that give structured policy guidance (see Figure 4). In contrast, strategy documents (83.3%) primarily acknowledge AI’s role without offering concrete implementation plans, contradicting their intended function.

Guidance documents (50% examples, 40% strategies) emphasise practical AI use over structured frameworks, while vision papers (100% examples) lack both strategic direction and evaluation mechanisms. Evaluation remains critically under-represented, appearing in only one guideline document (7.7%) and absent in all other types (see Figure 4). This highlights a major gap in AI policy accountability and structured assessment.

Many documents in all target groups mention ethics when they talk about AI-related competencies. For example, all of them bring up issues like data security, bias, and responsible AI use (see Figure 5). This shows a shared policy focus on mitigating AI risks.

Understanding AI principles and critical evaluation are also prioritised, especially for teachers (57.1%, 82.1%) and students (64.3%, 71.4%), suggesting efforts to equip them with AI literacy. Higher education providers also emphasise these competencies, reinforcing AI’s role in academic settings.

Even though teachers play a big part in putting AI into practice, documents for teachers only show 42.9% of AI usage competency, which shows a need for more practical application guidance. Communication and cooperation remain the least addressed competencies across all groups (below 50%), pointing to a lack of policies supporting interdisciplinary AI collaboration. Awareness of AI’s societal impact varies, with academic support staff (61.9%) and teachers (53.6%) showing higher recognition than

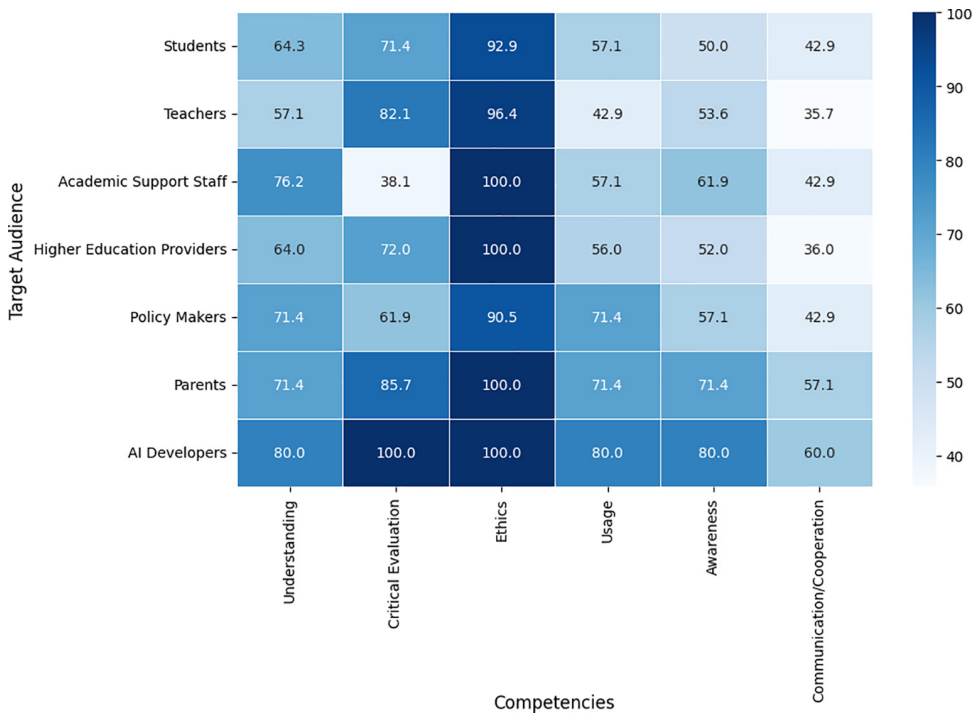


Figure 5 Comparison Between Target audience and Competencies Mentioned

students (50%) (see Figure 5). This suggests inconsistencies in preparing different groups for AI-driven changes in education.

A comparison of document depth and competencies highlights gaps in AI policy frameworks. Evaluation-level documents (though only one) comprehensively cover all competencies (100%), making it the most complete. At the strategies level, documents mostly mention ethics (100%), critical evaluation (82.4%), and understanding (64.7%), which backs up their structured approach (see Figure 6). Examples-level documents emphasise ethics (92.9%) and usage (71.4%), illustrating AI applications but lacking deeper strategic guidance. The documents at the acknowledgement level have the fewest mentions, especially in awareness (20%) and communication/cooperation (30%). This shows that not much attention has been paid to AI's effects on society (see Figure 6).

While ethics is consistently prioritised, awareness and communication/cooperation remain under-represented, signalling a lack of interdisciplinary collaboration. Usage is fully covered in evaluation (100%) but is lower in acknowledgement (40%), indicating weak implementation support (see Figure 6). Overall, AI policies focus on ethics and critical evaluation but lack practical application, collaboration, and societal awareness, requiring a more balanced framework.

AI competency coverage varies significantly across education levels, revealing gaps in policy focus. Understanding (83.3%), ethics (88.9%), and usage (72.2%) are well shown in generic-level documents. However, critical evaluation (55.6%) and communication/



Figure 6 Comparison Between Depth of Document and Competencies Mentioned

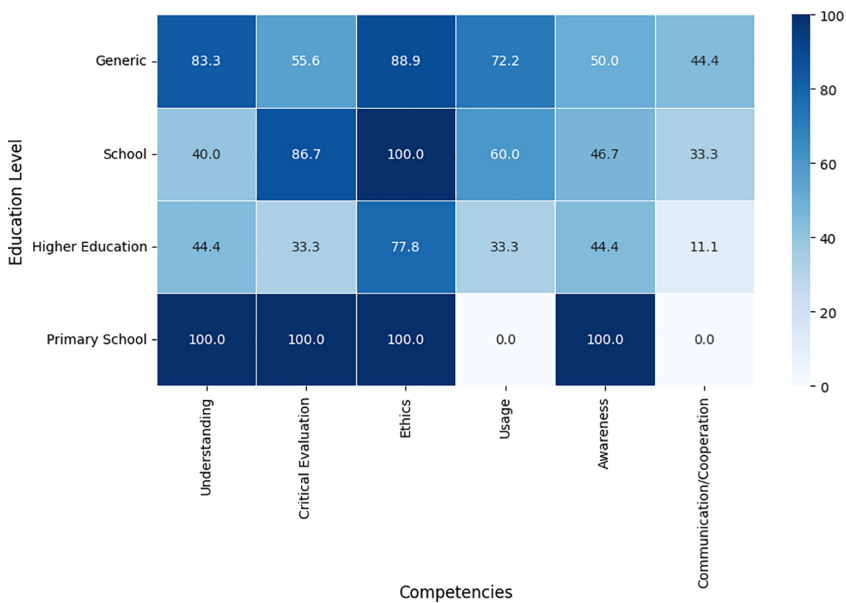


Figure 7 Comparison Between Education Level and Competencies Mentioned

cooperation (44.4%) are not as well shown, which suggests that analytical and collaborative skills are not given enough attention (see Figure 7).

School-level policies prioritise ethics (100%) and critical evaluation (86.7%), reinforcing ethical competencies, but understanding (40%) and communication/cooperation

(33.3%) remain under-represented, indicating an incomplete AI education framework. Documents targeted at higher education show that competency coverage is low, especially in critical evaluation (33.3%) and communication/cooperation (11.1%) (see Figure 7). This means that students lack guidance on how to work together using AI tools. Primary school policies (single case) cover ethics, understanding, and awareness (100%), but not usage (0%) or communication/cooperation (0%). This shows that early AI education is still mostly about ideas and not how to use them.

Discussion

This study looked at how AI-related abilities are reflected in educational policy documents across OECD nations and found substantial fragmentation and gaps in policy depth and target group coverage. These findings are consistent with prior research that has shown a lack of integrated plans for AI literacy development (Fernández-Batanero et al., 2022; Ng et al., 2023).

A key finding is the uneven distribution of skills, and the constant focus on ethics in documents, which shows widespread worries about AI risks such as bias and data privacy (Wang et al., 2023; Yi, 2021). Nonetheless, communication, cooperation, and knowledge of AI's societal implications are still inadequately represented, reflecting apprehensions that existing frameworks overlook interdisciplinary collaboration and practical context (Sperling et al., 2024). Although policies recognise AI technologies (Commission & Directorate-General for Education, 2022; Vuorikari & Holmes, 2022), the practical skills required for their use are only marginally addressed, particularly for educators, confirming earlier results that educators are responsible for AI integration but lack adequate assistance or resources.

The lack of evaluation tools raises concerns regarding accountability and progress tracking, topics previously highlighted in critiques of OECD and UNESCO frameworks (Howells, 2018; UNESCO, 2018). Several strategic documents lacked substantive content, only recognising AI's significance. This indicates a theoretical adoption of policy without actionable implementation. Comparisons among target groups further show policy disparities. Despite being crucial to implementation, teachers rarely receive strategic or evaluative policies, which magnify their accountability in the absence of sufficient resources (Ng et al., 2023). In contrast, AI developers, who were less frequently referenced, received more organised guidance, demonstrating inconsistent prioritisation. A lower number of mentions and higher rates of strategy-based policies in students show that they are not fully ready for AI-driven environments.

This study highlights the division in AI education strategies, which prioritise ethics over practical skills, teamwork, and responsibility. As with other studies, these problems show how important it is for countries to have unified policies that spell out AI-specific competencies, offer help with implementation, and make sure there are tools for measuring progress (Alam, 2024; Fernández-Batanero et al., 2022; UNESCO, 2021). However, this study is limited to OECD countries and national-level documents, potentially

overlooking regional or institutional strategies. Additionally, policy content was assessed qualitatively without evaluating policy impact in practice. Future research could explore longitudinal policy shifts, the effectiveness of implemented AI competencies, and stakeholder perspectives (e.g., teachers, students) on AI policy relevance.

Conclusions

This study examined the representation of AI-related competencies in educational policy documents across OECD countries. The findings reveal that competencies are often categorised unevenly, with a strong focus on ethics but limited attention to practical usage, communication, and societal awareness. Guidance on implementation is frequently superficial, with many documents lacking concrete strategies or evaluation mechanisms. Gaps were identified in how policies address target groups, with teachers receiving little strategic support despite their central role, while students and AI developers are inconsistently considered. Education levels also show imbalance, particularly in school and higher education, where collaborative and applied competencies are under-represented. To ensure effective AI integration, policies must define specific competencies, support implementation, and provide measurable outcomes. A balanced focus on practical skills, collaboration, and accountability is essential for preparing educators and learners for an AI-driven future.

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Appendix A

No.	Country	Author	Type of document	Link to Document
1	Australia	Working group from the Australian Academic Integrity Network	Guidelines	Generative Artificial Intelligence Guidelines
2	Australia	National AI in Schools Taskforce	Other	The Australian Framework for Generative AI in Schools
3	Austria	Federal Ministry of Education, Science and Research	Guidance	Dealing with AI in the education system
4	Belgium	Digisprong Knowledge Centre and the Data and Society Knowledge Centre	Guidelines	Responsible AI in Flemish education: A collaborative process from development to use
5	Belgium	General Administration of Education	Other	Focus: AI
6	Canada	Higher education council and Commission on Ethics in Science and Technology joint committee of experts	Recommendations	Generative artificial intelligence in higher education: pedagogical challenges and ethics
7	Chile	Ministry of Education	Recommendations	Guide for teachers on how to use chat GPT
8	Czechia	Expert working group	Recommendations	Recommendations on how to work with artificial intelligence for teachers, principals, parents and student
9	Denmark	Expert working group	Recommendations	Expert group on chat GPT and other digital tools
10	Estonia	Expert working group	Guidance	AI guide for school principals, teachers and students
11	Japan	Ministry	Guidelines	Provisional guidelines for AI in primary and secondary education
12	Korea	Digital Education Planning Department	Guidelines	Basic research for applying educational artificial intelligence systems to schools
13	Latvia	Expert working group	Guidelines	Artificial Intelligence in Higher Education
14	Latvia	Academic Department	Guidelines	Guidelines for the Use of Artificial Intelligence
15	New Zealand	Ministry	Guidance	Generative AI
16	New Zealand	Ministry of Education	Guidance	Guidance on the acceptable use of Artificial Intelligence
17	Norway	Directorate of Education	Guidance	Advice on artificial intelligence in schools
18	Norway	Academic Department	Guidelines	Guidelines for the Use of AI

No.	Country	Author	Type of document	Link to Document
19	Poland	Ministry of Education and Science	Guidance	What AI is not good for. A guide for teachers
20	Poland	Ministry of Education and Science	Guidance	Chat GPT at school opportunities and threats
21	Sweden	National Agency for Education	Guidance	Advice on AI, Chat GPT and similar tools
22	United States (Oregon)	Oregon Department of Education	Guidance	Generative AI in K-12 Classrooms
23	United States (California)	California Department of Education	Guidance	Artificial Intelligence: Learning with AI Learning about AI
24	United States (Washington)	Superintendent of public education	Guidelines	Human-Centered AI Guidance for K–12 Public Schools
25	United States	U.S. Department of Education	Recommendations	Artificial Intelligence and the Future of Teaching and Learning Insights and Recommendations
26	United Kingdom (England)	Russell Group	Other	Russell Group principles on the use of generative AI tools in education
27	United Kingdom (England)	Department for education	Other	Generative artificial intelligence (AI) in education
28	Ireland	National Academic Integrity Network	Guidelines	Generative Artificial Intelligence: Guidelines for Educators
29	France	Ministry of National Education and Youth)	Guidelines	Artificial intelligence and education
30	Germany	The Federal Ministry of Education and Research	Other	KI-Aktionsplan – BMBF
31	Greece	Institute of Informatics and Telecommunications	Strategy	Democratising AI: A National Strategy for Greece
32	Hungary	Ministry for Innovation and Technology	Strategy	Hungary’s Artificial Intelligence Strategy. Stip Compass
33	Israel	Israeli National AI Program	Strategy	The Israeli National AI Program
34	Italy	The Ministry of Education, University and Research, the Ministry of Economic Development, and the Minister of Technological Innovation and Digital Transition	Strategy	Italy, AI Strategic Programme (2022–2024) – OECD.AI

No.	Country	Author	Type of document	Link to Document
35	Lithuania	Ministry of the Economy and Innovation	Vision	Lithuanian Artificial intelligence strategy
36	Lithuania	Academic Ethics and Procedures of the Republic of Lithuania	Guidelines	Guidelines on the Ethical Use of Artificial Intelligence in Education and Research
37	Luxembourg	The Government of the Grand Duchy of Luxembourg	Vision	Artificial Intelligence: a strategic vision for Luxembourg.
38	Portugal	The Portuguese Innovation Agency (ANI), Ciência Viva and the Portuguese Agency for Administrative Modernisation (AMA)	Strategy	The National Artificial Intelligence Strategy “AI Portugal 2030”
39	Slovenia	Group of National Ministries	Strategy	National Programme to Promote the Development and Use of Artificial Intelligence in the Republic of Slovenia by 2025
40	Spain	Spanish Ministry of Education, Vet and Sports	Guidelines	Guide on the Use of artificial intelligence in education
41	Switzerland	ETH Zurich (Swiss Federal Institute of Technology in Zurich)	Guidelines	https://ethz.ch/de/die-eth-zuerich/lehre/ai-in-education.html
42	Turkiye	Council of Higher Education	Guidelines	Ethics Guide of Generative Artificial Intelligence Use in the Scientific Research and Publication Process of Higher Education Institutions,
43	Netherlands	The Ministry of the Interior and Kingdom Relations	Vision	Government-wide vision on generative AI of the Netherlands

*No documentation found: Colombia, Costa Rica, Finland, Iceland, Mexico, Slovakia

MORPHOLOGY IN TEXTBOOKS FROM 1992 TO THE PRESENT

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ABSTRACT

The Latvian language's complex morphological system plays a vital role in grammar acquisition but is not automatically mastered, as frequent word-form errors among native speakers indicate. Amid growing concerns about the diminishing role of grammar in education, this study examines how morphological topics are incorporated into Latvian language textbooks for primary education from 1992 to 2024. It addresses three research questions: (1) What textbooks were used historically and are used today? (2) To what extent and in what sequence are morphological topics covered? (3) How are these topics presented, and is greater emphasis placed on grammatical theory or communicative competence?

Textbooks were selected for their widespread historical use or alignment with the 2018 curriculum standard. Using adapted criteria from the *UNESCO Guidebook on Textbook Research*, the study found that while morphology remains integral, the depth of coverage, sequencing and pedagogical approach vary considerably. Particularly in Grade 4, significant inconsistencies emerge, often misaligning with learning outcomes. Older textbooks emphasised systematic theory, while newer materials favour real-life applications, sometimes at the expense of grammatical structure.

The findings highlight an urgent need for more coherent and standardised textbook development to ensure continuity in students' morphological skills. A balanced integration of theoretical understanding and practical application is essential for effective language education.

Keywords: *morphology, learning content, Latvian language, textbook analysis, curriculum development*

Introduction

The relevance of the study

One of the most crucial aspects of mastering one's native language is grammar, traditionally understood as comprising morphology and syntax (Paegle, 2003). Morphology examines the structure of words, including their morphemic composition, the formation of word forms and paradigms, grammatical categories, and morphological word classes (Paegle, 2003).

A solid grasp of morphology is essential for syntax comprehension, and deficiencies in morphological knowledge are reflected in weak text composition and comprehension,

as demonstrated by national examination results (VISC, 2017–2022) and international assessments (OECD, 2023).

In the Latvian education system, morphology is introduced during the early years of primary education (Grades 4–6). By the end of Grade 6, students are expected to “identify the part of speech of all independent words, select the most precise ones for creating their own texts, and ensure cohesion between sentences” (*Noteikumi par valsts pamatizglītības...*, 2018).

Given the complexity of the Latvian morphological system, its mastery is far from automatic, as frequent incorrect word-form usage among native speakers suggests. Although there has been a gradual shift in the curriculum from a grammar-focused approach towards communicative competence, concerns persist regarding its potential adverse impact on language quality (Laiveniece & Lauze, 2021).

Educational theories widely emphasise the need to balance theoretical knowledge with practical application. Bruner’s spiral curriculum concept advocates for the systematic introduction and revisiting of complex structures such as morphology (Bruner, 1960), while Kolb’s experiential learning theory (Kolb, 1984) and Vygotsky’s zone of proximal development (Vygotsky, 1978) stress the importance of linking conceptual understanding to contextualised practice.

At the national level, educational content is determined by subject standards (*Izglītības likums*, 1998), which provide the foundation for model curricula. Textbooks, typically designed in accordance with these curricula, serve as the most accurate reflection of the actual scope and depth of instruction.

Against this background, a critical question arises: to what extent do Latvian language textbooks succeed in maintaining the necessary balance between morphological theory and communicative practice? A systematic analysis of textbooks can help clarify whether the observed decline in grammatical competence stems from curricular changes or other contributing factors.

This study analyses a selection of Latvian language textbooks published between 1992 and 2024. A detailed description of the textbook selection criteria is provided in the Methodology section.

Previous studies

The content of Latvian language education has been analysed. For example, Diāna Laiveniece and Linda Lauze, in their study *Variations of Grammar Learning Content at Elementary School: Analysis of Latvian Language Standards* (2021), concluded that the proportion of grammar-related topics in the Latvian language curriculum has decreased. This is due to a shift in focus compared to the 1992 standard (Lasenberga ed., 1992), where more than half of the content across eight topics was dedicated to grammar. The 2004 standard (*Pamatizglītības mācību priekšmetu standarti*, 2004) emphasises communicative competence, while the 2018 standard (*Noteikumi par valsts pamatizglītības...*, 2018) highlights the pragmatic aspect of language use, text and linguistic creativity.

In modern linguodidactics, grammar is learnt in connection with a specific context – speech situations, texts – rather than in isolation, as was largely the case in previous

practices of Latvian regarding native language acquisition. However, as Diāna Laiveniece and Linda Lauze point out, the standard's requirements are quite general, meaning that the content of textbooks can vary significantly. Nevertheless, textbooks are the primary material and direct tool shaping the daily learning experience.

Latvian language textbooks have not been systematically analysed. Few analyses exist; a notable contribution is Normunds Dzintars' doctoral dissertation, *The Development of Latvian Language Teaching Content in Primary School from 1940 to 1991: A Linguodidactic Perspective* (2013), in which, using descriptive and comparative historical methods, Latvian language textbooks up to 1991 were examined.

Diāna Laiveniece, in her methodological book "Valodas mācības pusaudzīm" (*Language Studies for Adolescents*) (2003), also provided an overview of Latvian language textbooks, emphasising that they are dominated by a grammatical-structural approach, where the application of acquired knowledge is mainly linked to the completion of reproductive tasks focused on grammatical content. Nevertheless, this overview pertains solely to textbooks published before 2003, as methodological changes began to emerge starting in 2004.

Certain aspects of modern educational content have also been analysed. For instance, the linguist Anna Vulāne has pointed out issues related to terminology in educational materials (Vulāne, 2011). However, there is still a lack of systematic analysis based on clear criteria in this area.

It is worth mentioning that the textbooks of the Lithuanian language, which is closely related to Latvian, have been systematically analysed; however, analysis has been limited to higher grade levels. The study analyses Lithuanian language textbooks for grades 11–12, focusing on how they present the concept of language and its functions. The main criteria include whether the textbooks adopt a scientific (descriptive) or normative (prescriptive) approach, their attitudes toward linguistic diversity, and their emphasis on language standardisation. The research primarily examines whether modern linguistic perspectives are incorporated or if outdated, nationalistic and prescriptive ideologies still dominate (Urbonaitė, 2019).

Analysis of textbooks as a methodology has not been extensively studied. Jason Nicholls highlights this in his review (Nicholls, 2003). One of the most comprehensive guidelines remains the *UNESCO Guidebook on Textbook Research and Textbook Revision* by Falk Pingel (2010), however, there are several publications in which the authors have proposed various criteria for evaluating textbooks. It is known that the evaluation of English language textbooks (both for native and foreign language contexts) is the most common (Syafiq Ya Shak *et al.* 2024; Mukundan *et al.* 2011).

Methodology

Selection of sources

The teaching materials selected for this study were chosen based on two key criteria. Older teaching materials, which are no longer in use, were selected based on the number of reprints (at least two editions), indicating that these textbooks were widely used and in demand. In contrast, contemporary teaching materials were selected based on their

availability – specifically, those currently accessible in schools and aligned with the existing national standard.

In total, 11 textbooks and one digital learning resource were selected. The inclusion of the digital resource was necessary, as for an extended period, no printed alternatives fully aligned with the relevant standard.

The analysed textbooks are summarised in Table 1, organised according to the intended grade level and grouped by the corresponding textbook series to highlight continuity.

Table 1 Analysed sources

Grade 4	Grade 5	Grade 6
	Dzintra Paegle <i>Latviešu valoda 5. klasei</i> (<i>Latvian Language for Grade 5</i>), Zvaigzne ABC 1991, 1992, 1995, 1996	Dzintra Paegle <i>Latviešu valoda 6. klasei</i> , (<i>Latvian Language for Grade 6</i>) Zvaigzne ABC 1993, 1994, 1996
Gita Andersone, Māra Filatova, Ārija Ptičkina, <i>Zīle. Latviešu valoda 4. klasei</i> , (<i>Zīle. Latvian Language for Grade 4</i>) Zvaigzne ABC 2002, 2006		
	Vēsma Veckāgana, <i>Latviešu valoda 5. klasei</i> , (<i>Latvian Language for Grade 5</i>) Lielvārds 2004, 2012, 2013, 2014, 2015, 2016	Vēsma Veckāgana, <i>Latviešu valoda 6. klasei</i> , (<i>Latvian Language for Grade 6</i>) Lielvārds 2004, 2012, 2013, 2014, 2015, 2016
Zenta Anspoka. <i>Latviešu valoda. Literatūra. 4.klasei. Pirmā un otrā daļa.</i> (<i>Latvian and Literature. Grade 4 Part 1 & Part 2</i>) Lielvārds 2017, 2018, 2019, 2020, 2022		
<i>Skola 2030 learning material set (2018) developed based on the sample curriculum for the subject Latviešu valoda 1.–9. klasei (Latvian Language for Grades 1–9).</i>		
Signe Ābola, <i>Latviešu valoda 4. klasei</i> , (<i>Latvian Language for Grade 4</i>) Zvaigzne ABC 2022	Gunta Sālijuma, Vija Valtere <i>Latviešu valoda 5. klasei</i> , (<i>Latvian Language for Grade 5</i>) Zvaigzne ABC 2021	Daina Štokmane, <i>Latviešu valoda 6. klasei</i> , (<i>Latvian Language for Grade 6</i>) Zvaigzne ABC 2024
	Zenta Anspoka, Egina Birzgale, Inga Zemīte. <i>Latviešu valoda 5. klasei, 1.–3. daļa</i> (<i>Latvian Language for Grade 5, Part 1–3</i>) Lielvārds 2022	Zenta Anspoka, Egina Birzgale, Inga Zemīte. <i>Latviešu valoda 6. klasei, 1.–3. daļa</i> (<i>Latvian Language for Grade 6, Part 1–3</i>) Lielvārds 2023–2024

Table 2 Morphological topics

Morphemics*	the study of morphemes – the smallest meaningful units in language – and their role in word formation
Word formation*	a process whereby new words are formed from existing words and stems, using the means, methods and models of word formation available in a language
Noun	a word class which comprises words expressing an objectness and employing the categories of gender, number and case
Adjective	a word class describing the properties of objects, marked for gender, number, case, degree of comparison, and definiteness
Numeral	a class of words expressing the number or order of objects
Pronoun	words that point to living beings, things and properties without directly naming them and that usually substitute for nouns, adjectives and numerals in a sentence
Adverb	a word class which consists of indeclinable words used to characterise actions, properties, circumstances
Verb	a word class which comprises words expressing actions, states and relations, and has, in Latvian, the grammatical categories of person, tense, mood and voice
Interjection	lexical unit used to communicate the speaker's emotions, volition or to express (reproduce) the sounds of the world
Prepositions	indicate relations between objects, phenomena, processes
Conjunctions	a class of function words used to connect syntactic units, such as content (lexical) words, phrases, clauses, and at the text level, also sentences
Particles	words used to express the speaker's attitude towards the content of an utterance and that add a modal, emotional and/or semantic meaning to a particular part of a sentence

*Morphemics and word formation are often considered separate branches of linguistics; however, in the school curriculum, they are included under morphology.

This study does not analyse textbooks in their entirety but rather focuses specifically on the representation of morphological topics within them (see Table 2). The description and translation of topics is based on *Latvian Grammar* by Andra Kalnača & Ilze Lokmane (2021), which was published in English.

In analysing textbooks, this study applies a set of criteria focusing on the structure and presentation of content, particularly regarding theoretical concepts, classification and practical application. To ensure alignment with established frameworks, these criteria are compared to the analytical instrument proposed by Pingel (2010), which outlines five main categories for textbook evaluation: (1) textbook sector components, (2) formal criteria, (3) types of texts and modes of presentation, (4) analysis of content, and (5) perspective of presentation. These categories encompass aspects such as factual accuracy, balance in topic selection, differentiation, problem-orientated approaches, and the use of various textual elements (e.g., illustrations, exercises, sources). The analytical criteria employed in this study include definitions and grammar rules, detailed classification, the practical application of theory, standard theory-based tasks, varied task types, and tasks based on real-life contexts. These criteria align with several of Pingel's

categories. Definitions, classifications and theoretical tasks align with Pingel's Types of *texts/mode of presentation*, particularly regarding descriptive authorial texts and sources. Tasks based on real-life contexts align with the *Perspective of presentation*, emphasising problem-orientated approaches and balancing rationality with emotional engagement. The variety of tasks and methods also relates to Pingel's *Analysis of content*, highlighting differentiation and the balance between factual knowledge and interpretation (Pingel, 2010). A variety of task types, progressing from reproductive to analytical levels, is essential to engage all students according to their individual abilities, reading proficiency and language development (Anspoka & Tübele, 2015). The selected criteria are specifically tailored to the structure of exercises and the integration of theory with practice. They fit within Pingel's broader framework, offering a complementary approach that maintains a structured and comprehensive evaluation of textbook content while addressing the specific research objectives. Furthermore, these criteria are consistent with those proposed in *Evaluative Criteria of an English Language Textbook Evaluation Checklist* by Jayakaran Mukundan et al. (2011). Table 3 presents the criteria assessment rubric, outlining the scoring system used for evaluation.

Table 3 Textbook Evaluation Criteria (theory- orientated – blue, application- focused – green)

Criteria	1 (low level)	2 (moderate level)	3 (high level)
Definitions and grammar rules	Basic definitions with minimal explanations; grammar rules are unclear or incomplete.	Definitions and rules are provided but lack depth or consistency.	Clear, precise definitions with well-explained and systematically structured grammar rules.
Classification	Limited or overly simplistic classification of linguistic elements; lacks depth.	Some classification is present but may be inconsistent or incomplete.	Comprehensive and well-organised classification of linguistic elements, demonstrating clarity and accuracy.
Application of theory	Theory is presented with little to no practical application; abstract explanations dominate.	Some connection between theory and practice, but examples are limited.	Strong link between theory and practice, with relevant examples and exercises that reinforce understanding.
Theory-based tasks	Tasks only focus on mechanical repetition of rules, with little room for understanding.	Standard exercises include some conceptual elements but remain largely rule-based.	A variety of well-structured theory-based tasks that encourage both rule application and deeper comprehension.
Tasks requiring different methods	Tasks rely on a single method, limiting student engagement and cognitive flexibility.	Some variety in task formats but limited in scope and depth.	A wide range of task types requiring different methods, encouraging diverse cognitive skills and problem-solving.
Tasks based on real-life contexts	Tasks are abstract and detached from real-life usage.	Some real-life examples, but they are not systematically integrated into exercises.	Tasks are strongly connected to real-life situations, promoting meaningful language use and practical skills.

The criteria are conditionally divided into two categories: theory-orientated (blue) and application-focused (green), helping to assess whether the textbooks emphasise grammatical theory or lean towards a communicative, practical approach.

As the study focuses on morphology, textbooks are not analysed in their entirety; instead, each morphology section is examined according to the established criteria. This approach reveals the depth of coverage for each morphological topic and enables a comparison of the topics included across different books or series.

Results

Textbooks in the 1990s

Before 2004, the results for grades 3, 6 and 9 were not differentiated. The 4th grade was considered part of primary school, so textbooks for this grade are not analysed. In contrast, textbooks by Dzintra Paegle *Latvian Language for Grade 5, and Latvian Language for Grade 6* (1991–1996), became widely used, and their release led to the replacement of previous textbooks (Dzintars, 2013). Paegle’s approach introduced a new structure with three parts: basics, deepening, and engaging language studies, with content differentiated based on students’ abilities. Her books present a non-traditional order for grammar topics. Syntax is covered first, followed by phonetics and lexicology, and only then is there morphology with a focus on it, especially nouns and adjectives, and later numerals, pronouns and verbs. Both textbooks offer a comprehensive study of morphology, though certain topics like verb tenses are reserved for older grades. The structure of the books follows a consistent pattern with theory, examples and exercises.

As seen in Figure 1, the textbooks cover almost all major morphology topics, except for interjections and function words.

It can be concluded that the textbooks provide a comprehensive theoretical foundation, which can be reinforced through related exercises. They explain the significance and function of morphological topics; however, they lack a variety of teaching methods

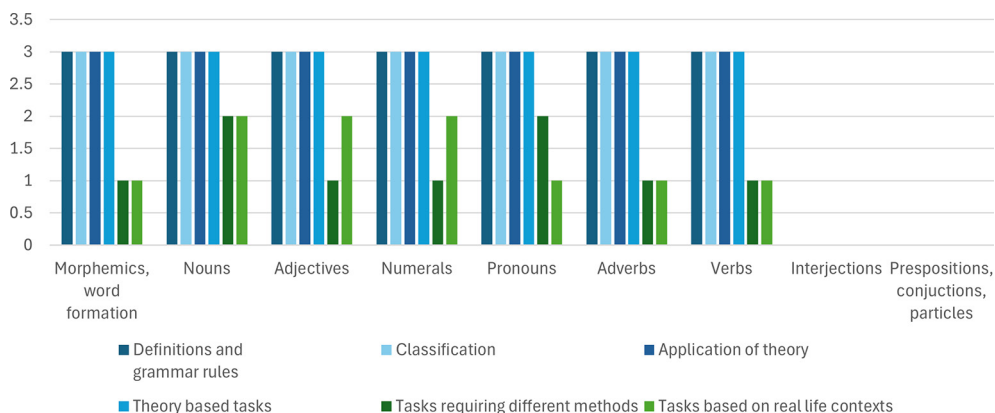


Figure 1 Evaluation of the books by Dz. Paegle, “Latvian Language for Grade 5” and “Latvian Language for Grade 6”, Zvaigzne ABC (1991–1996)

and a connection with students' everyday life. For example, there are no tasks requiring the use of newspapers, magazines, or other external resources, nor are project-based assignments included. Additionally, common practical mistakes are only addressed in a fragmented manner. This book series has a distinctly grammar-focused approach.

Morphology in Textbooks After 2004

Since 2004, 4th grade has been considered the start of primary school. However, in practice, many schools continued to treat it as part of elementary school for years. Even today, no official document strictly defines 4th grade as part of primary education. Nevertheless, the division of learning outcomes by grade level led to a revision of the curriculum, although this was not immediate. In 2002, Gita Andersone, Māra Filatova and Ārija Ptičkina published the textbook *Zīle. Valodas gudrību grāmata 4. klasei (Zīle. The Book of language Wisdom for Grade 4)* (2002). It was aligned with the new curriculum standards and was reissued in 2005 with updates. This book was part of a series covering grades 1–3, marking the end of elementary school. It introduced morphology topics such as word structure and expanded knowledge on nouns, adjectives, personal pronouns, verbs, and numerals. In this textbook, theory is no longer highly structured or emphasised (as seen in Figure 2).

Morphology topics are not strictly separated but are instead presented in a more integrated way, supplemented with creative exercises and project work, and incorporated into various themes. However, this is not necessarily due to a change in approach but rather because elementary school content has traditionally been more integrated. However, this book also lacks a connection to everyday experiences. A more systematic and structured approach to morphology can be seen in Vēsma Veckāgana's popular textbook series, first published in 2004 and reissued until 2016. It remains available digitally at soma.lv and covers grades 5–9.

In the 5th-grade textbook (Veckāgana 2004; 2012–2016^a) morphology appears at the end, following syntax and lexicology. It begins with a word structure review, followed by word formation and compound words, and provides an overview of all word classes.

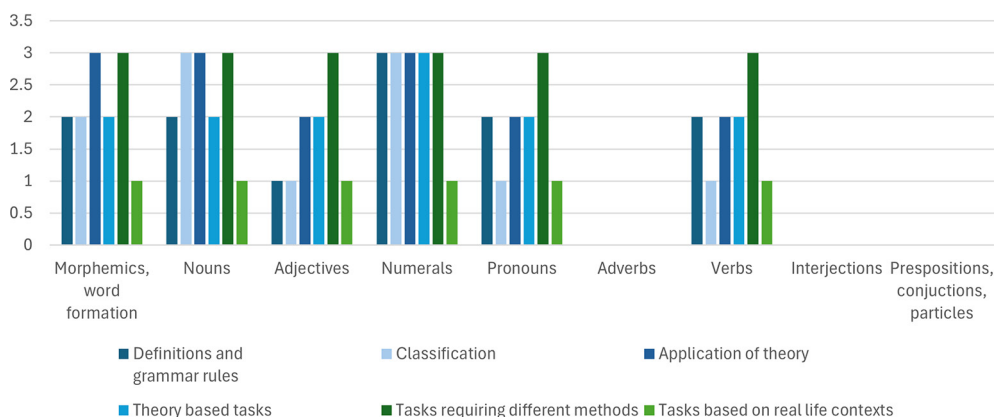


Figure 2 Evaluation of the book by G. Andersone, M. Filatova, and Ā. Ptičkina, “Zīle. Latvian Language for Grade 4”, Zvaigzne ABC (2002, 2006)

The focus is on nouns, their grammatical categories, capitalisation rules, and a brief introduction to declensions. The 6th-grade textbook (Veckāgana, 2004; 2012–2016^b) starts with syntax, emphasising how different word classes function within a sentence. Instead of studying word classes separately, it compares similarities and differences among nouns, adjectives, numerals, and pronouns. It then briefly covers numerals, pronouns and verbs before concluding with an overview of indeclinable word classes. As can be seen in Figure 3, word formation and nouns are the most emphasised topics, with an increased emphasis on diverse methods and task variety. There is also a noticeable connection between exercises and students' everyday lives. However, this integration is not consistent across all morphology topics.

In 2017, *Lielvārds* published Zenta Anspoka's textbook *Latviešu valoda. Literatūra. 4. klase (Latvian and Literature for grade 4)* in two parts as a continuation of the editions for the previous grade. However, it has no follow-up books for higher grades. The textbook takes an integrated approach, combining literature and Latvian language. The first part focuses on syntax while the second emphasises morphology. As can be seen in Figure 4,

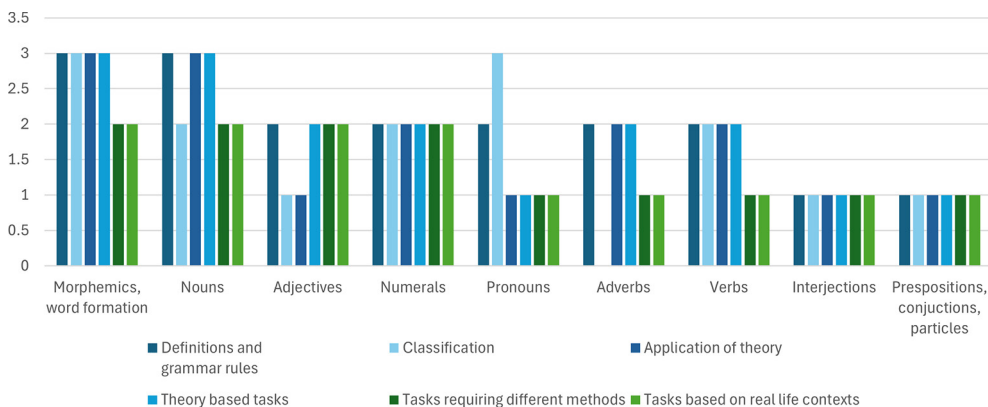


Figure 3 Evaluation of the books by V. Veckāgana, "Latvian Language for Grade 5", "Latvian Language for Grade 6", Lielvārds (2004, 2012–2016)

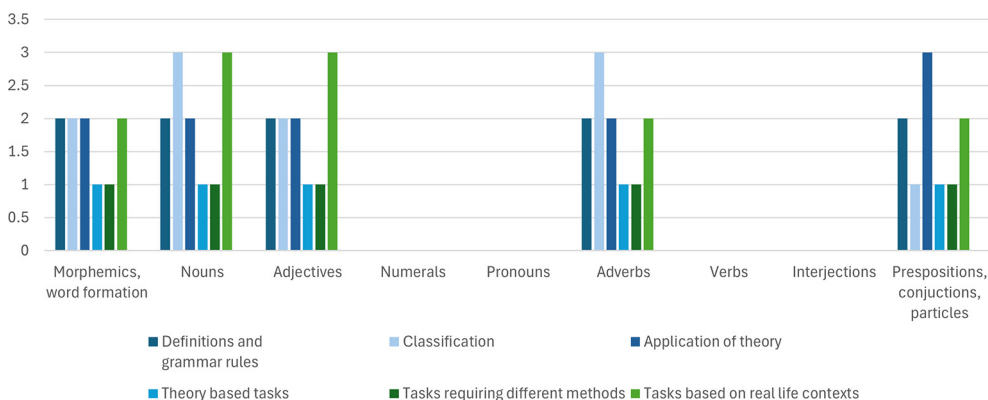


Figure 4 Evaluation of the book by Z. Anspoka, "Latvian and Literature for Grade 4", Lielvārds (2017–2020; 2022)

the textbook presents grammar in a practical context with an unconventional sequence for learning word classes (the adverb is usually introduced at a later stage of language instruction), likely due to its continuity from previous grades.

The author treats grammar as a tool for language comprehension rather than a goal itself. It avoids lengthy definitions and rules, summarising them in a dictionary section at the end. However, a more structured approach with practical exercises could help reinforce language norms. The focus is on text comprehension, with integrated critical thinking and value-based questions alongside literary texts and grammar. This approach aligns with the 2018 curriculum standard, making the book still relevant and widely used.

2018 Curriculum Reform – A Shift in Education

The *Skola 2030* project, launched in 2016, aimed to modernise teaching by focusing on skills and real-world applications rather than solely on theoretical knowledge. This led to the adoption of a new primary education standard (*Noteikumi par valsts pamatizglītības...*, 2018), which also restructured Latvian language education into three inter-related sections: (1) Purposeful Communication in Context, (2) Text and Text Creation, and (3) Language Structure. Unlike previous standards, the new approach defines learning goals through “big ideas” that highlight linguistic principles instead of listing specific objectives. Grammar is addressed within Language Structure, emphasising the systemic nature of language. Morphology and word formation are introduced progressively in Grades 3, 6 and 9. By the end of Grade 6, students are expected to:

- Correctly spell derived words, compounds and proper nouns.
- Recognise and apply word formation patterns.
- Identify word classes and use them effectively in writing.

The introduction of the new standard faced criticism, particularly due to the lack of updated teaching materials (Orupe, 2021). The first available resource, the digital *Skola 2030* material (Lazdiņa & Šalme, 2018), received mixed reviews. A key challenge was its thematic organisation, structuring content around student-relevant topics rather than traditional subject divisions. While this encouraged interdisciplinary connections, it required close coordination among teachers, which was not always feasible. Grammar topics in these materials are linked to practical use but often lack systematic structure. Theoretical explanations are minimal, with a stronger focus on real-life applications, as illustrated in Figure 5.

Morphological topics are presented in a fragmented manner, lacking clear classification or systematic structure. For instance, in Grade 4, the subjunctive mood of verbs is introduced alongside noun nominative forms, while independent word classes are only addressed later. Grade 5 focuses on adjective comparison and nouns, whereas Grade 6 begins with a general review and continues with pronouns, definite and indefinite adjective endings, numerals, and adverbs – although only time-related adverbs are covered. The study of verb tenses in the indicative mood appears as the final morphology topic.

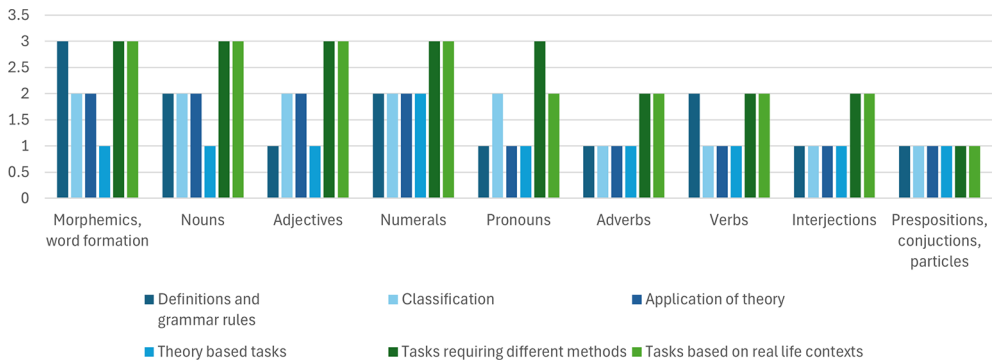


Figure 5 Evaluation of “Skola2030” learning material (2018)

Coverage remains inconsistent: some word classes are revisited multiple times, while others – such as adverbs and verbs – receive minimal attention, resulting in significant variation in depth and content across the grades. On a positive note, morphemics and word formation are regularly reinforced throughout the materials. Over time, textbook publishers began revising existing resources and developing new materials in accordance with the new standard. One of the first publishers to do so was *Zvaigzne ABC*. Following the distribution of Achievable Results outlined in the standard, their Latvian language textbook series starts with *Latvian language for Grade 4* (Ābola, 2022), where students are introduced to word structure and the fundamentals of parts of speech. At this stage, morphological topics are presented broadly and at an introductory level. In *Latvian Language for Grade 5* (Sālijuma & Valtere, 2021), the focus shifts primarily to syntax, with morphological content largely absent. Although sentence elements are introduced, parts of speech are only mentioned briefly and superficially. Consequently, the comprehensive study of morphology is deferred to Grade 6 (Štokmane, 2024), where all independent parts of speech are explored in detail – except for verbs, which are scheduled for study in Grade 7. As a result, the standard’s requirement that students master all independent parts of speech by the end of Grade 6 (*Noteikumi par valsts pamatizglītības...*, 2018) is not fully met.

Content delivery aligns with the competency-based approach, linking grammar topics to practical use. Textbooks provide both theoretical explanations and a clear structure, supported by a diverse range of exercises. A well-maintained balance between theory and practice is evident, with group work, projects and tasks based on authentic texts included. Grammar rules are clearly summarised at the end of each book. A notable drawback, however, is that all morphology topics are concentrated within a single school year, while verbs are not addressed. A more effective structure would distribute material across two or three years, introducing basic verb knowledge earlier and allowing further development in Grades 7–9. Each textbook is authored by a different author or team, and although the overall format remains similar, the presentation style varies significantly. Notably, the Grade 5 and 6 textbooks are based on previously published materials, *Labyrinths of Language* (Sālijuma, 2007; Rudzīte & Štokmane, 2008), and, although adapted to

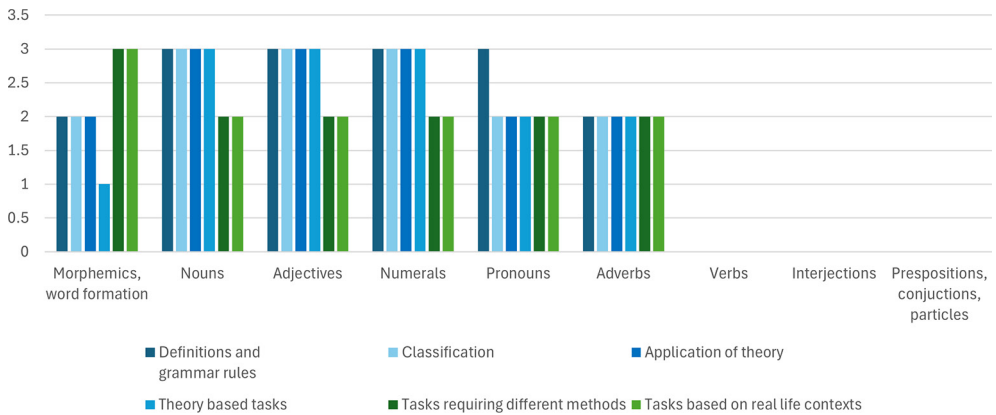


Figure 6 Evaluation of the book by D. Štokmane, "Latvian Language for Grade 6", Zvaigzne ABC (2024)

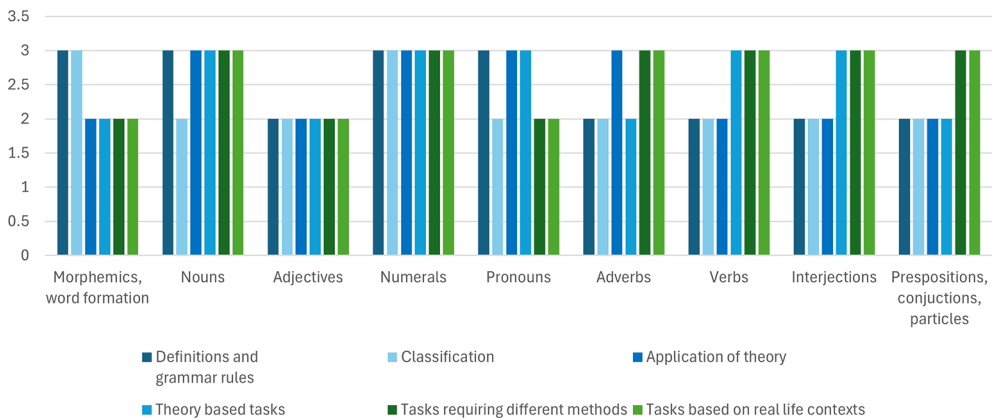


Figure 7 Evaluation of the books by Z. Anspoka, E. Birzģale, I. Zemīte, "Latvian Language Grade 5", & "Latvian Language for Grade 6", Lielvārds (2022, 2024)

the new standard, retain a more traditional grammatical approach. In contrast, the Grade 4 book was developed entirely anew.

The publishing house *Lielvārds* also updated its textbook series for basic education in line with the new standard. Their new series begins with Grade 5 textbooks, as Grade 4 is covered by the earlier resource *Latvian and Literature for Grade 4* (Anspoka, 2017), continuing the tradition of treating Grade 4 as part of the primary school stage.

As shown in Figure 7, this grammar resource provides the most comprehensive coverage of morphological topics. However, the depth of treatment varies across different word classes. The material places a strong emphasis on practical tasks linked to everyday life, while theoretical content, although secondary, is still incorporated. This balanced approach, where theory supports practical use, represents a pedagogically valuable aspect.

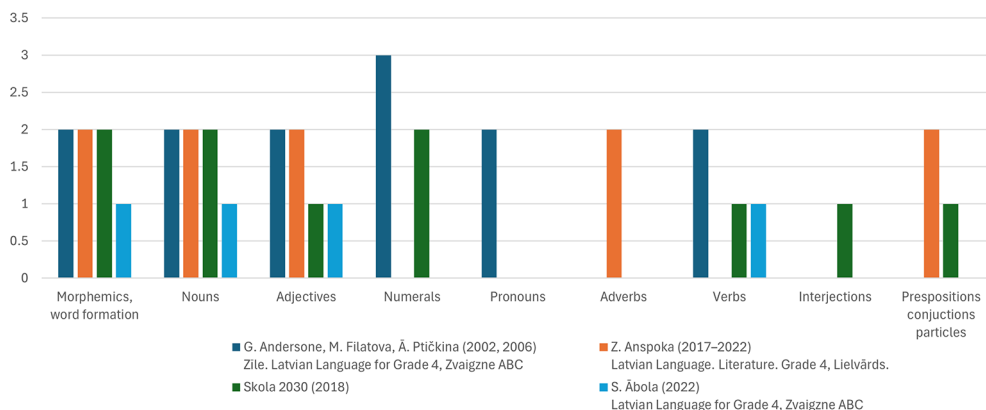
Morphological topics are introduced at the end of grade 5, with an initial emphasis on the acquisition of word structure and word formation, followed by a systematic

exploration of individual word classes. In alignment with the structure found in the *Zvaigzne ABC* curriculum, this resource first addresses nouns and then adjectives, while grade 6 is allocated for the study of the remaining independent word classes. Notably, this series also incorporates the study of verbs, thereby meeting the standard curricular requirement that all independent word classes be covered by the end of grade 6. Additionally, function words are introduced at the conclusion of grade 6, further enhancing the comprehensiveness of the material. From the perspective of morphological instruction, this teaching material provides the most thorough coverage of relevant topics. A notable limitation, however, is the absence of grade 4 content within this set. Given the extensive scope of the material, a more balanced distribution across three academic years could enhance the learning process by allowing time for systematic review and reinforcement.

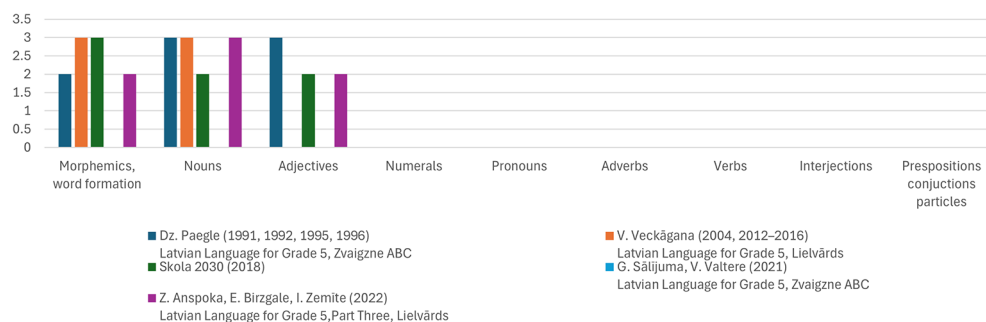
Based on the results of the conducted analysis, a clear issue has emerged – the thematic distribution of morphological topics across grades is inconsistent. To illustrate this problem, visual representations (Figure 8) were created. These diagrams show how the topics are distributed by grade level, taking their depth of coverage into account. The visualisation is based on the previously conducted evaluation of topic coverage, using the arithmetic mean as an indicator of average depth.

This comparative analysis of Latvian language textbooks for Grades 4 to 6 reveals substantial inconsistencies in the sequence and depth of morphological topic coverage, posing challenges for curricular coherence and learner progression. The greatest variation appears in Grade 4, where the treatment of key categories – morphemics, nouns, adjectives, and numerals – differs sharply across textbooks. Some offer in-depth, systematic coverage, while others only address these topics briefly or omit them altogether, resulting in unequal starting points for learners. Inconsistencies at this critical stage may significantly affect students' long-term language development, as early gaps often persist into later grades. By Grade 5, content becomes more stable, with morphemics, nouns and adjectives receiving broader attention across most textbooks. However, variation remains in the treatment of pronouns and adverbs: while some textbooks elaborate on these categories, others only offer superficial coverage. Partial alignment may ease progression for some students, but those transitioning between schools or materials may encounter gaps in assumed prior knowledge, disrupting continuity. In Grade 6, textbooks generally cover a wider range of morphological categories, including more nuanced topics such as adverbs, pronouns, prepositions, and interjections. Although distribution is more balanced, depth still varies, particularly regarding the complexity and reinforcement of earlier content. Some textbooks continue to emphasise morphemics and previously introduced categories, while others focus primarily on new material without sufficient review. Across all three grades, the absence of standardised progression creates significant pedagogical challenges, including difficulties in assessment, unequal learning opportunities, and additional demands on teachers to address gaps and redundancies. The problem is particularly acute for students changing schools or textbooks, risking unpreparedness or unnecessary repetition. Given the cumulative nature of morphological knowledge and its importance for literacy development, such fragmentation undermines coherence,

Morphological topics in textbooks for Grade 4



Morphological topics in textbooks for Grade 5



Morphological topics in textbooks for Grade 6

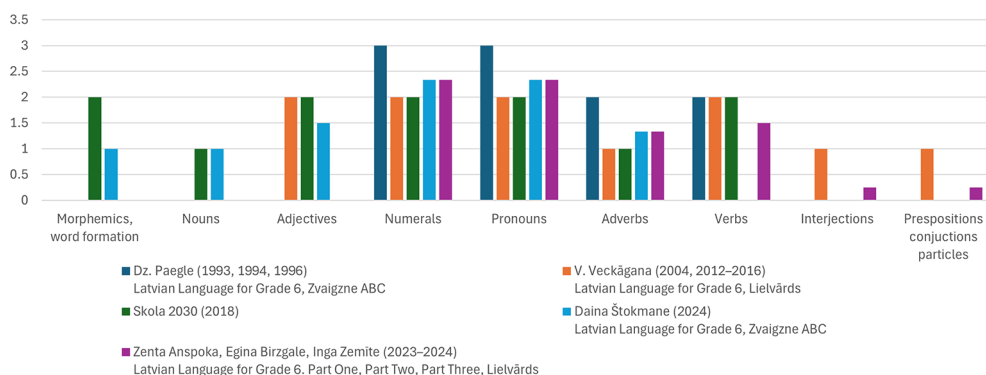


Figure 8 Morphological topics in textbooks for Grades 4–6

equity and inclusivity in language education. These findings highlight the urgent need for curriculum-aligned content guidelines to ensure greater consistency across textbooks, particularly at the foundational level, supporting smoother learner progression and more equitable outcomes.

Discussion

The analysis of Latvian language textbooks from 1992 to 2024 shows that while morphology has consistently held a central place in the curriculum, its treatment has been far from uniform. Differences are particularly evident in the scope, sequence and depth of morphological content across textbook series and publication periods.

One of the most critical findings concerns the variability in Grade 4 materials, where content often appears to continue the elementary stage rather than marking a systematic transition to basic education, as defined in the national curriculum standards. This inconsistency may disrupt the gradual development of morphological competence and limit students' ability to master increasingly complex grammatical structures.

The study also reveals significant differences in pedagogical approaches. Earlier textbooks, particularly those authored by Dzintra Paegle, emphasise theoretical clarity and systematic classification, providing a comprehensive foundation in morphology. In contrast, more recent materials, particularly those developed under the *Skola2030* initiative, prioritise communicative competence and real-life application, often at the expense of structured grammatical knowledge. Although this shift aligns with broader trends in modern linguodidactics, the findings raise concerns that insufficient theoretical grounding may hinder students' ability to internalise linguistic norms and apply them flexibly.

Educational theories underline the importance of balancing theoretical understanding with practical application. Bruner's spiral curriculum (Bruner, 1960), Kolb's experiential learning theory (Kolb, 1984), and Vygotsky's zone of proximal development (Vygotsky, 1978) all emphasise that effective learning requires both structured concept acquisition and contextual application. Thus, textbooks that fragment or minimise theoretical content in favour of communicative exercises risk undermining the full development of grammatical competence.

Another challenge is the lack of coherence between publishers' materials. As the sequence and emphasis of morphological topics vary widely, students who change schools – or even classes within the same school – may experience disruptions in their learning progression. The absence of unified school-wide guidelines for textbook selection further exacerbates inequalities in language education.

While modern textbooks offer many innovative methods and real-life applications, a stronger emphasis on theoretical structuring and gradual knowledge progression, and alignment with national curriculum expectations remains necessary to ensure the development of robust and transferable grammar skills.

Although this study focused specifically on the treatment of morphological topics, a broader analysis – including syntax, text creation and communication skills development – would provide a more comprehensive understanding of how Latvian language competence is supported across the curriculum. Expanding the evaluation criteria to address the cognitive challenge, differentiation for diverse learners and intercultural awareness could further enhance insights into the pedagogical quality of these resources. Future research examining the full structure and didactic design of Latvian language

textbooks would help build a more complete picture of how linguistic and communicative competencies are cultivated in primary education.

Conclusions

This study confirms that morphology has consistently been a key component of Latvian language education, yet the way it is presented in textbooks has varied significantly across different periods. Older textbooks, such as those by Dzintra Paegle, placed strong emphasis on theoretical understanding and systematic development of grammatical concepts. In contrast, more recent materials, including those aligned with the *Skola2030* initiative, prioritize communicative competence and practical language use, but often with a reduced focus on structured grammatical knowledge.

The analysis also highlights inconsistencies in the scope and sequencing of morphological topics, particularly in grade 4, where the transition between educational stages is not always clearly supported. Differences in the balance between theory and practice suggest that students' acquisition of morphological competence may depend heavily on the choice of teaching materials, potentially impacting language proficiency over time.

To improve the coherence and effectiveness of morphology instruction, future textbook development should prioritise a balanced integration of theoretical and practical elements, ensure systematic progression across grades, and be guided by clearer, more detailed curriculum frameworks. Strengthening these aspects is essential to support the development of linguistically competent, critically thinking learners, who can navigate both academic and real-world language use with confidence.

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THE CONCEPT OF PHYSICAL LITERACY IN CHILD-CENTRED EDUCATION

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ABSTRACT

The notion of physical literacy (PL) has gained prominence as a pivotal concept in explaining why children learn physical skills, how they understand their practical application in everyday life, and why physical literacy is important for overall development. In a child-centered learning environment, the emphasis is on the importance of personal development, linking new knowledge to an existing knowledge base. This is consistent with the concept of PL. The review's objective was to define PL, identify its elements, and demonstrate its connection in a child-centered setting. A literature review was conducted in the Scopus database on the topic of PL and physical or sport education to investigate the research questions. Researchers analyzed the identified elements of PL according to the description of child-centred teaching approach.

Results. The concept is described more as the philosophically based and developed by Margaret Whitehead (2010). PL is defined as motivation, confidence, physical competence, knowledge, and understanding of the use of physical activity throughout the lifespan. The six elements of the PL conceptual framework – motivation, confidence and physical competence, environment, sense of self, self-expression and communication, and knowledge and understanding are applicable to a child-centered learning approach.

Conclusions. The concept of PL is essential for developing physical education to individualize the learning process and enable students to learn independently. The framework of PL elements aligns seamlessly with the child-centered sport pedagogy approach.

Keywords: *physical literacy, physical education, physical activity, child centered, pedagogy*

Introduction

The topic of physical literacy (PL) has emerged as a key concept in understanding children's motivation to learn physical skills, their understanding of their practical application in everyday life, and their role in overall development. Current data on children's physical health and physical activity habits show that only 18.8% of adolescents in Latvia engage in regular physical activity for one hour a day, while 22.8% of seven-year-olds are overweight (Sabiedrības veselības pamatnostādnes 2021.–2027. gadam, 2022). This negative trend, which is based on sedentary lifestyles, is a global concern (Carl et al., 2023).

PL is a critical developmental concept that promotes healthy physical, emotional, social, and cognitive development in young people (Santos et al., 2022).

UNESCO and the World Health Organization have acknowledged physical literacy as a key element in developing quality sports education curricula from pre-school to university (World Health Organization (WHO), 2019). The concept is an integral component of high-quality school sport education curricula (Santos et al., 2022, Hogan et al., 2023). This is supported by Bores-García et al. (2021), who argue that effective physical education pedagogy must include curricula and teaching methods that emphasize learning across multiple domains (Bores-García et al., 2020). Dudley (2015) and Whitehead (2019) emphasise idea, asserting that ‘quality’ physical education must promote personal growth, foster a holistic environment, and adhere to a whole-child development approach (Dudley, 2015, Whitehead, 2019). Studies have shown that physical education has a significant impact on every area of learning, particularly in supporting children’s social development (Bores-García et al., 2020). Further research is necessary to clarify the current definition of the concept of “physical literacy” and the interpretation of its concepts in recent years.

The Latvian Ministry of Education and Science has developed the National Education Guidelines 2021–2027 “Skills for the Future Society.” The document confidently outlines the “fastest organizing and hardest to predict” future trends in educational development. One of the developments is learning to learn and a personalised approach (Rīkojums Nr. 436, 2021). Child-centered learning is undoubtedly one of the most promising directions of learning processes. The child-centered approach is focused on understanding and meeting a child’s specific developmental needs. This approach is clear: children and adults are equal, communication is respectful, and each child’s values, wishes, and needs are taken into account (Grava, 2018, Medne, 2018). The explanation of a child-centred learning approach aligns seamlessly with the principles of a child-centred learning approach. In a learner-centered learning environment, the emphasis is on personal development. New knowledge is linked to an existing knowledge base. The approach emphasizes students’ autonomy in choosing what and when to learn, underscoring their personal responsibility for their learning journey (Bayram-Jacobs & Hayırsever, 2016, Power et al., 2019). The child becomes an active participant in learning, initiating, directing, and interpreting their own learning. The emphasis is on experiential learning, play, self-directed exploration, and individualized pacing, which is in line with the concept of physical literacy (Whitehead, 2019). Active learning environments are an essential element of the concept of physical literacy. In these environments, children can move freely and choose activities, while adults play a supportive role. This approach aligns with the child-centered pedagogical approach (Power et al., 2019). It is essential to clarify the concept of PL and its relevance to a child-centered approach to education.

The Conceptual Framework for Physical Literacy

The term “physical literacy” is most commonly used in the English-speaking countries of the United Kingdom, Australia and Canada. In most European countries PL is

not defined as a concept or principle in school curricula (Carl et al., 2023). However, in most European countries, school curriculum descriptions align with the concept of PL and its components. Germany uses the concept of “Physical Activity Related Health Competence” (PAHCO) (Sudeck & Pfeifer, 2016), which is consistent with the concept of PL. Despite the current low level of recognition of PL in Europe, national representatives in the field of sport and physical education anticipate that the concept will be explored in more depth in the near future (Carl et al., 2023). The concept of PL has undoubtedly been widely disseminated and applied in sport and physical education, using different names for the concept. PL is most commonly identified with movement skills, physical or motor competence, and movement or motor abilities (Almond, 2013; Edwards et al., 2017). These terms describe components that fall under one of the domains of PL. PL, as outlined in the comprehensive framework by Margaret Whitehead (2010), is indisputably associated with physical activity. PL can take the form of any form of physical activity that is personalised, meaningful, and individually engaging. It is clear that physical activity requires attention from the body and mind, which develop through life experiences and different situations (Durdin-Myers et al., 2020).

The goal was to clarify the definition of the concept of PL, its constituent elements, and its role in child-centered education. Two research questions emerged during the subsequent research process: 1. Explain the concept of PL and its elements in a sport education framework. 2. How are the elements of PL manifested through a child/student/learner-centred approach in physical education?

Methodology

The first research question was clarified by conducting a literature review in the Scopus database. The keywords and Boolean operators AND, OR were used in the search: (“physical AND literacy”) AND (“physical education”) AND (“child-centered”) OR (“student-centered”) OR (“learner-centered”). The review included all social science publications and research from 2021 to 2025. The literature review included all relevant publications in English from the social sciences field. These publications were studied based on their keywords, titles, and abstracts. The goal was to identify those that examined PL in the context of sport or physical education. In this literature review, researcher thoroughly studied all definitions of PL, after conducted a content analysis to identify the description and manifestation of the elements of PL in individual behavior as defined by Waithead (2010). There are six key elements: 1) motivation, 2) confidence and motor competence, 3) interaction with the environment, 4) sense of self, 5) self-expression through non-verbal communication and interpersonal interaction, 6) knowledge and understanding of body health. The second research question was answered by analyzing the domains and elements of PL in the context of a student-centered educational approach, in conjunction with indicators of child-centered pedagogy (see Table 1). This explanation of the child-centred learning approach clearly demonstrates the manifestation of the concept of PL in research.

Results

After the selection stage, 69 articles were screened. Following a thorough screening process, 32 reports were identified as being relevant to our review. Following a thorough review of the literature, 22 papers were excluded from the review due to their irrelevance to physical literacy in child-centered or student-centered or learner-centered physical education ($n = 12$), and the lack of explanation of physical literacy elements ($n = 10$). The review included ten publications that met the inclusion criteria. Nine publications definitively defined physical literacy as “the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engaging in physical activity throughout life” (Whitehead, 2010, Whitehead, 2019, International Physical Literacy Association (IPLA), 2017). One publication included Dudley’s (2015) definition of physical literacy: “the ability to move skillfully and confidently using all the physical resources available to a person at any given time in a variety of contexts.” PL is defined as continuous learning through enabling individuals to achieve their goals, develop their knowledge, movement, and potential, and alongside this, develop their capacity and skills to participate fully in their community and wider society (Godbout, 2023). Whitehead’s (2010) philosophical explanation of PL identified six elements of physical literacy and their manifestations in human behavior (Whitehead, 2010). The logic of describing the elements of the concept of PL explains why different individuals have different levels of participation in physical activity. It is clear that a person’s previous experiences, intrinsic motivation, self-confidence, and physical competence shape their understanding and responsibility for engaging in physical activity throughout their life. There’s a clear link between these elements and behaviors and the characteristics of a student-centered learning process (see Table 1).

Table 1 PL elements relationship with a child-centered approach

Nr. p.k.	Physical literacy element by Whitehead	Expressions in human behavior (Whitehead, 2010)	Child-centered learning approach (Bayram-Jacobs & Hayırsever, 2016, Power et al., 2019)
1.	Motivation	Positive attitude	<ul style="list-style-type: none"> • Child is an active participant, satisfaction of needs (interests), • Child can initiate and direct their own learning activities
2.	Confidence and physical competence	Movement with poise, coordinated movements and movement patterns	<ul style="list-style-type: none"> • Contributes to meeting development needs. • Child can learn from first-hand (direct) experiences. • Child can learn from practical (hands-on) experiences. • Child can learn through physically active experiences. • Adults monitor child’s progress predominantly through observations.

Nr. p. k.	Physical literacy element by Whitehead	Expressions in human behavior (Whitehead, 2010)	Child-centered learning approach (Bayram-Jacobs & Hayırsever, 2016, Power et al., 2019)
3.	Interaction with the environment	Smooth interaction with the environment around you in everyday life and during physical activities	<ul style="list-style-type: none"> • Child can learn from explorative experiences • Different learning activities constantly available in the learning environment. • Learning takes place indoors and outdoors.
4.	Sense of Self	Perceives the body as part of the personality, the embodied nature of the human being.	<ul style="list-style-type: none"> • Understanding and meeting personal needs
5.	Self-expression through non-verbal communication and interpersonal interactions	Empathetic relationships with other people	<ul style="list-style-type: none"> • Respectful communication • Adult extends the child's thinking by asking open (rather than closed) questions. • Adults encourage children to reflect on their learning experiences
6.	Knowledge and understanding of body health	Awareness of movement experiences and awareness of the impact of physical activity on lifestyle and health	<ul style="list-style-type: none"> • Take responsibility for their own learning. • Contributes to the definition of tasks. • Child is challenged and supported on their stage (not age) of learning

Motivation

Motivation is the key to determining the will and interest to meet developmental needs. This determination is achieved through the exploration and interaction with every aspect of the environment. The child's freedom to choose activities and pursue their own interests unquestionably promotes intrinsic motivation (Power et al., 2019). This review definitively establishes motivation as a central element of PL (Wong, 2022; Godbout, 2023; Santos et al., 2022; Schmittwilken et al., 2024; Carcamo-Oyarzun et al., 2023; Choi et al., 2022; Hogan et al., 2023). Conditioned motivation is a short- and long-term trigger of physical activity. The short-term intrinsic motivation aspect is clear: the child's engagement in the physical activity offered is associated with immediate participation, emotion, and situation (Wong, 2022; Schmittwilken et al., 2024; Wilkie et al., 2023; Hogan et al., 2023; Petrie et al., 2021). Research focuses on the long-term motivational aspects related to identity formation and the development of lifestyle habits and routines (Godbout, 2023; Santos et al., 2022; Carcamo-Oyarzun et al., 2023; Choi et al., 2022; Stage et al., 2025). Two of the studies reviewed cover both short- and long-term aspects (Hogan et al., 2023; Schmittwilken et al., 2024).

Confidence and movement competence

Confidence and movement competence in the context of child-centered pedagogy are defined as meeting developmental needs through direct, physically active, and hands-on

learning experiences. The educator plays a pivotal role as the observer of the child's progress (Power et al., 2019). In the context of physical literacy, these aspects are explained as the use of coordinated, fluid movement patterns and skills (Whitehead, 2010). The review confidently describes the interplay between confidence and movement literacy in different ways. It has been described as the ability to move with confidence in different contexts (Godbout, 2023), the analysis of results from objective tests of the relationship between movement competence and confidence (Carcamo-Oyarzún et al., 2023), approaches to building confidence in sport lessons by trying out different roles (e.g., coach, player, and referee) (Choi et al., 2022), and using the "teaching games for understanding" (TUG) approach (Petrie et al., 2021). These publications frequently feature the interplay between movement competence and confidence, suggesting that sport lessons and physical activity are more than just physical exercise. It is clear that certain publications place more emphasis on the confidence-building aspect of physical education (Wong, 2022; Godbout, 2023; Schmittwilken et al., 2024; Hogan et al., 2023; Wilkie et al., 2023). A small number of publications emphasize aspects of movement literacy (Stage et al., 2025; Santos et al., 2022). A contemporary approach to physical literacy in the context of physical education is clear: it promotes movement competence and child confidence through pared practical movement experiences.

Interaction with the environment

A child's self-organised motor learning experience is intrinsically connected to the surrounding environment. Child-centered pedagogy is defined as the availability of activity-inducing learning environments, both indoors and outdoors (Power et al., 2019). Physical literacy is defined as a seamless interaction with the environment in everyday life and during physical activity (Whitehead, 2010). Four interaction themes are identified: the environment as a learning resource (Wong, 2022; Choi et al. 2022), adapting the environment to the needs of schools and students (Petrie et al., 2021; Santos et al., 2022); the social and physical environments as determinants of physical literacy; (Carcamo-Oyarzun et al., 2023; Stage et al., 2025; Wilkie et al., 2023; Carcamo-Oyarzun et al., 2023, Schmittwilken et al., 2024) and the digital and information environments for physical literacy (Hogan et al., 2023; Godbout, 2023). Environment as a learning resource is a pedagogical approach integrating physical education into everyday school settings as mathematics and the arts. This promotes children's orientation to the environment and awareness of its impact on health and movement behaviors (Wong, 2022). The review definitively explores the environment as a learning resource in another strand, examining the course format and assessment culture (Choi et al., 2022). University-level sports education hinders the development of authentic interactions. The assessment of physical activity is based on technical criteria, not the quality of participation (Choi et al., 2022). There are two ways to adapt the environment to the needs of students and schools. The personalization of the environment is key to student engagement and interaction intensity. It is essential to understand physical literacy to design appropriate learning environments. Evaluating environmental adaptation in

the context of physical literacy reveals the importance of understanding the concept of physical literacy in shaping the learning environment. It is evident that a lack of understanding of the long-term importance of physical literacy in school environments leads to the organization of short-term physical activities or sporting events (Petrie et al., 2021). The social and physical environment definitively impacts the level of PL (Stage et al., 2025; Wilkie et al., 2023; Carcamo-Oyarzun et al., 2023; Schmittwilken et al., 2024). The results are clear: the environment has a significant impact on children's physical activity, behavior, and development. There are two aspects to environmental factors. The first is the physical environment, which includes things like school premises, outdoor facilities, and distance from the school (Stage et al., 2025; Wilkie et al., 2023; Carcamo-Oyarzun et al., 2023; Schmittwilken et al., 2024). The second is the social environment, which includes classroom dynamics and teacher support (Carcamo-Oyarzun et al., 2023; Schmittwilken et al., 2024). The themes of digital and information environments describe the interaction between students' digital literacies, such as e-portfolios, reflection building, and the physical environment (Hogan et al., 2023; Godbout, 2023).

Self-concept or Sense of Self

Self-concept in the context of a child-centered pedagogical approach is defined as understanding and meeting one's personal needs (Power et al., 2019). In the context of physical literacy, the body is an integral part of the personality. It is essential to be aware of one's own body to understand one's physical, emotional, cognitive and social needs, capabilities and potential (Whitehead, 2010). The review revealed three definitive themes: the general manifestation of self, short-term manifestations, and long-term manifestations. Manifestations of self-expression are identified as descriptions of affect (Wilkie et al., 2023, Hogan et al., 2023, Choi et al., 2022, Carcamo-Oyarzun et al., 2023, Schmittwilken et al., 2024), forms of evaluation (Godbout, 2023, Stage et al., 2025, Petrie et al., 2021) and connections to meaningful movement experiences (Santos et al., 2022, Wong, 2022). Short-term manifestations are clear: they are immediate expressions of emotion during movement activity (Wilkie et al., 2023), pleasure and feelings of satisfaction after successful activity (Schmittwilken et al., 2024), emotional attachment to movement activity (Hogan et al., 2023; Carcamo-Oyarzún et al., 2023; Stage et al., 2025; Wong, 2022; Godbout, 2023), and emotional responsibility during a single sport season (Choi et al., 2022). It's clear that long-term manifestations of self-feeling are associated with healthy self-development practices, self-awareness as part of personal identity, PL as a means to build self-confidence, and self-esteem formation through participation in a sports team.

Self-expression through non-verbal communication and interpersonal interaction

In the context of child-centered pedagogy, this element means respectful communication. The adult extends the child's thinking by asking open-ended questions and encouraging reflection on their learning experiences (Power et al., 2019). The concept of

PL clearly emphasizes empathic relationships with the people around them (Whitehead, 2010). The review confidently identifies three dimensions of self-expression: self-expression in movement (Godbout, 2023, Schmittwilken et al., 2024, Hogan et al., 2023), interpersonal interaction (Choi et al., 2022, Petrie et al., 2021, Wilkie et al., 2023, Stage et al., 2025), and personal growth (Santos et al., 2022, Carcamo-Oyarzun et al., 2023, Wong, 2022). Self-expression is defined as aesthetic, fluid movements and quality movement performance (Godbout, 2023). The child's expression, manifested through movement or "voice," is crucial in shaping the content of movement play (Schmittwilken et al., 2024). The expression of movement is evident in the creation of video recordings during digital portfolio production (Hogan et al., 2023). Interpersonal interactions take the form of collaboration, empathy within a community or group, and the dynamics of these relationships. Role-plays are offered to university students. Senior students take on the roles of player, coach, or referee (Choi et al., 2022). In the preschool and primary school age groups, peer learning and peer support are clear (Petrie et al., 2021; Wilkie et al., 2023; Schmittwilken et al., 2024). Interpersonal interactions also take place in community-based activities to promote active mobility (Stage et al., 2025). Personal development is marked by a strong sense of belonging and positive emotions in shared activities (Carcamo-Oyarzun et al., 2023). In summary, self-expression emerges developmentally through an individual's unique movement, language, and cooperation in communities at different levels.

Knowledge and understanding of body health

In child-centered education, knowledge and understanding are essential. Students must take responsibility for their learning by participating in defining tasks according to their learning or developmental stage (Power et al., 2019). Whitehead's explanation of the concept is clear: it is understanding the experience of movement and the impact of physical activity on lifestyle and health (Whitehead, 2010). The review definitively covers the following themes: theoretical understanding of physical activity and health by students and teachers (Stage et al., 2025; Godbout, 2023; Choi et al., 2022; Wong, 2022), and practical understanding through experience (Schmittwilken et al., The studies from 2021 to 2025 definitively demonstrate the importance of PL as a lifestyle compass, as well as the importance of the interaction between knowledge and practice. The impact of adapted, appropriate environments and resources is clear (Petrie et al., 2021, Wilkie et al., 2023, Santos et al., 2022, Carcamo-Oyarzun et al., 2023). Theoretical understanding is a vital component of the course, where students master crucial competencies. They gain a solid grasp on physical activity guidelines, fitness and health management skills, and nutrition knowledge and health risk factors. Practical experience includes the following tasks: measuring heart rate during physical activity (Schmittwilken et al., 2024), choosing, planning, and reflecting on one's own physical activity (Godbout, 2023), and developing reflective skills about changes in well-being resulting from physical activity (Hogan et al., 2023). The interaction between theoretical knowledge and skills includes clear insights that indicate environmental and real-world demands are crucial

for the practical application of physical activity. For example, knowledge about healthy lifestyles is unrelated to active mobility behavior (Stage et al., 2025). This unequivocally shows that learning environments must be designed and adapted close to real-life situations where knowledge can be applied in practice (Santos et al., 2022). PL as a lifestyle compass is the foundation for an active lifestyle based on personal choices. Therefore, skills that are transferable to other areas of life are emphasised PL as a life skill with interdisciplinary skills (Santos et al., 2022). Sport teachers must build physical activity habits, not just movement skills (Wilkie et al., 2023). The review definitively shows that knowledge is most effectively acquired through practical experience and reflection, rather than theoretical learning. A learning environment that is motivating, purposefully structured, and connected to real life is essential for knowledge transition into long-term behavior.

Discussion

The content analysis of the publications in the review definitively shows that the concept of PL is identified on the basis of a definition developed by English professor Margaret Whitehead. PL is defined as the motivation, confidence, physical competence, knowledge, and understanding to engage in physical activity throughout your life (Whitehead, 2010, 2019, IPLA, 2017). A literature review confirmed that most publications are based on Whitehead's definition of physical literacy (Edwards, 2017). The interplay between the elements of physical literacy is multi-layered (Whitehead, 2010). The explanation of the concept definition clearly identifies the construct elements of motivation, beliefs, physical competence, and environment in a specific order. These elements interact and develop into the next level of physical literacy through the development of self-concept, self-expression, knowledge, and understanding (Whitehead, 2010). The child's freedom to choose activities and pursue their own interests unquestionably promotes intrinsic motivation (Power et al., 2019).

Motivation is the primary element that builds the child's will and interest to meet developmental needs by exploring and interacting with every aspect of the environment (Whitehead, 2010). This approach aligns with the student-centered learning model and the child-centered approach, emphasizing the child's interests and choices (Bayram-Jacobs & Hayırsever, 2016; Medne, 2018; Grava, 2018). Motivation is a key part of physical literacy, and it's closely tied to a learner-centered approach to education. Student-centered pedagogy adapts the learning process to the needs, interests, and developmental level of the student, providing opportunities for choice, active participation, and meaningful experiences. This approach promotes intrinsic motivation, which is essential for long-term engagement in physical activity (Durdin-Myers et al., 2020). Research indicates that environments where children can make choices, feel their voices are heard, and have their autonomy supported are key to motivating them to participate in physical activity (Wilkie et al., 2023; Hogan et al., 2023). In such an environment, motivation is not forced; it naturally arises from a desire to participate, explore, and improve. This aligns precisely with the component of Whitehead's (2010) definition of PL – motivation

as a driver to be physically active in different life situations. Game-based approaches, such as Teaching Games for Understanding (TGfU) or non-linear pedagogy, provide students with the opportunity to experience the joy, challenge, and self-transcendence of movement (Wong, 2022). These approaches contribute to both motor competence and inner satisfaction, which in turn strengthens motivation (Santos et al., 2022; Choi et al., 2022; Godbout, 2023). It is clear that motivation supports the development of physical literacy and realizes the principles of student-centred learning. It is a vital link between personal experience and a structured teaching environment, effectively empowering students to grow.

Confidence and motor competence – more than movement skills

Whitehead (2010) stresses that motor competence and confidence are not just the mechanical accumulation of skills. They develop in close interaction with the environment in which the child is motivated and has experiences that reinforce their perception of their abilities. Movement competence has two aspects: physical ability, such as balance, coordination, and endurance, and perceived competence, or how a child assesses his or her own abilities. Research (Carcamo-Oyarzun et al., 2023) definitively shows that perceived competence (PMC) is directly related to motivation and willingness to engage in physical activity. Children's confidence and motor competence are strengthened by success and clear progress. A learning environment that fosters risk-taking and supports students as they navigate challenges is crucial for this process (Schmittwilken et al., 2024). Studies show that environments where children are given the choice to take on roles such as coach or referee promote not only physical development but also emotional and social development (Choi et al., 2022). Motivational theories, particularly Self-Determination Theory (Ryan & Deci, 2017), clearly underscore the pivotal role of autonomy in fostering competence. It is clear that when a child feels in control of their actions and choices, they become more confident about their movement skills (Santos et al., 2022; Wong, 2022). This approach strengthens confidence through successful execution of movements and positive experiences. TGfU and non-linear pedagogy are essential for developing confidence and motor competence. It is clear that these approaches provide children with a variety of situations and tasks in which they can develop skills and adapt them to different circumstances (Wong, 2022; Godbout, 2023). This ability to adapt movements to different situations is an essential feature of physical literacy, which sets the stage for lifelong participation in movement activities. It is clear that confidence and motor competence are essential elements of PL. As the child develops, they will experience both successes and challenges. It is clear that the development of these elements is strongly influenced by the environment, the learning approach, and the opportunity to be an active participant in one's own learning. It's clear that the development of physical literacy (PL) is deeply connected to the environment in which a child grows, learns, and moves. The physical environment and the social environment have a significant impact on a child's opportunities for physical activity and the development of motivation, motor competence, and confidence – the components of PL.

The physical environment as a space for learning and development

The physical environment creates opportunity structures that determine a child's access to movement experiences. It includes spaces like halls, playgrounds, and parks, as well as equipment, learning materials, and how these environments are organized and adapted to the child's needs. Schmittwilken et al. (2024) make a strong case for designing the physical environment to allow children to experiment freely, make mistakes, and discover their bodies in motion. This approach fosters emotionally rich learning situations where children feel safe and motivated. The quality of the physical environment plays a key role in developing PL as an "environmental reader". Children must learn to recognize and respond appropriately to different movement contexts (Stage et al., 2025). However, the the Canadian Assessment of Physical Literacy second edition (CAPL-2) tool used in PL research does not directly measure the specificity of the environment. This underscores the necessity for future studies to incorporate measures that reflect the child's interaction with the environment, particularly during active mobility (Stage et al., 2025). Integrative programmes in such as the IMOVE (Influences of Classroom-Based Health Educational Programmes) initiative, which develops the health literacy of Danish primary school students with regard to physical activity, have been proven to be effective (Wong, 2022). These programs link physical education to other curricular areas, such as visual arts or mathematics. They help children understand the importance of the environment in the context of health and movement behaviors (Wong, 2022). This approach is essential for expanding children's understanding of movement as a lifestyle.

Social environment – the people who create the experience of the child

It is clear that physical space is not the only factor that influences PL development. The social environment – teachers, peers, and family – is equally important. They can either facilitate or inhibit PL development. Whitehead (2010) stresses that physical literacy is developed in a socio-cultural context. It is not an individual achievement; it takes place in relationships. Child-centered pedagogy emphasizes an autonomy-supportive environment where students can participate in decision-making, express their opinions, and be active participants in the learning process (Santos et al., 2022; Wong, 2022). Non-linear pedagogy and TGFU approaches definitively enable children to become motor problem solvers. These approaches effectively develop motor skills, self-efficacy, and confidence (Wong, 2022; Godbout, 2023). Schmittwilken et al. (2024) definitively show that adults must act as supportive partners. They must listen to children's needs, offer choices, and create an environment where "mistakes are allowed." This approach fosters a positive emotional climate, which is essential for the development of intrinsic motivation. The wider social environment also influences PL through the prism of culture, politics, and social justice. PL is a social justice issue. Marginalized children have limited access to health-promoting environments, as PL Santos et al. (2022) clearly demonstrate. It is evident that outdoor education programmes, as organised by Outward Bound Adventures (OBA), have a definitive impact on the transformation of environments into inclusive and developmental spaces (Santos et al., 2022). The digital environment undeniably impacts

children's relationship with movement, including social networks and media. Godbout (2023) discusses "situated learning" and the impact of media on children's movement choices, emphasizing that the environment is not just a physical space, but also a cultural and informational one (Godbout, 2023). Physical literacy undoubtedly develops in close interaction with the environment, both spatially and socially. Environmental design is the key.

Self-concept as a component of physical literacy

Whitehead (2010) emphasizes that PL encompasses movement competence, confidence, and self-awareness. In this context, students' sense of self is not just an emotional state but an essential developmental indicator. Wong (2022) and Santos et al. (2022) definitively state that autonomy-supportive approaches, such as TGFU and non-linear pedagogy, contribute to students' self-confidence and positive attitudes. These approaches empower children to make their own decisions, learn from their experiences, and develop positive self-esteem over time. Non-linear pedagogy helps students "know themselves in motion," improving their sense of well-being in relation to their bodies and abilities (Wong, 2022). Godbout (2023) proposes the concept of 'performance appreciation' – the ability to reflect on the quality of movement. This concept develops competence and fosters a positive attitude towards oneself as an individual capable of movement. Students must engage in self-reflection and see progress to ensure their emotional development and long-term well-being. Student-centered assessment is a proven method of strengthening self-esteem. Hogan et al.'s (2023) study definitively shows that e-portfolios effectively document a child's progress in physical literacy and promote a child's emotional connection to physical activity. Students confidently reflect on their achievements and goals, developing self-confidence and motivation. Schmittwilken et al. (2024) make a strong case for why this approach is key to student success. Students thrive when they have the opportunity to make mistakes in a safe environment, experience success at their own level, and receive recognition. This strategy reliably fosters a positive emotional response in students, strengthening their sense of capability and belonging. Carcamo-Oyarzun et al. (2023) definitively state that children with higher perceived motor competence (PMC) also show higher levels of joy and self-confidence, whereas low PMC is associated with negative self-esteem. A child's sense of self is essential for their emotional well-being, participation, learning effectiveness, and long-term relationship with physical activity. A student-centered pedagogy that includes choice, feedback, a safe environment, and personal development is the most effective way to enhance self-concept in physical education.

Movement as a form of identity

Self-expression in the context of physical literacy is not just an aesthetic display of movement. It is a deeply personal process in which children express their feelings, identity, and relationships with others. Godbout (2023) describes "performance appreciation" as an experience where children consciously appreciate the quality, aesthetics, and significance of movement. This helps them develop their physical expression skills. It develops

through movement, social interaction, and self-knowledge, becoming an important element of child-centered pedagogy. Students must be able to move freely and experiment with movement language. This is a tool for creative self-expression. Non-linear pedagogy and TGfU models provide opportunities to express oneself in the right or most efficient way of moving, but also to move in one's own way, finding meaning and joy in movement (Wong, 2022). Schmittwilken et al. (2024) make a clear point: free play is crucial for children's physical self-expression. Children boldly experiment in movement games, creating their own unique "movement language" that challenges social stereotypes (Schmittwilken et al., 2024). In this approach, students don't just follow a structure – they make it. They develop their own style of movement, rhythm, and positive attitude toward movement.

Interpersonal relationships and collective self-expression

Self-expression is inextricably linked to interpersonal dynamics, including cooperation, trust, and empathy. Santos et al. (2022) confidently propose adventure pedagogy as an environment in which young people develop social skills and self-expression through group work and reflection. Choi et al. (2022) also provide similar insights, highlighting that role reversal in the SE model (coach, referee, player) strengthens communication skills and collective responsibility. Wilkie et al. (2023) emphasize the crucial role of the teacher in fostering an inclusive environment and trusting relationships, where students feel free to express their ideas and emotions. Pedagogical models such as Teaching Personal and Social Responsibility and Cooperative Learning structure physical education as an environment where cooperation and emotional expression are integral parts of learning (Wong, 2022). In such settings, children develop emotional empathy, respect, and the ability to listen to others' perspectives. They also break social stereotypes by adopting new roles in a group. Godbout (2023) definitively states that "performance appreciation" is key. It's clear that watching and appreciating are essential parts of developing self-expression, not just mechanisms for evaluation.

Opportunities for personal growth

Self-expression is an essential part of inner development and autonomy. Research definitively shows that environments where children can make their own decisions and plan their own activities strengthen their confidence and self-esteem (Wong, 2022; Santos et al., 2022). Adventure pedagogy provides experiences that challenge children and encourage them to express their true selves, enhancing authenticity and meaningful participation (Santos et al., 2022). Self-expression is key to a child's development of identity and self-awareness. Santos et al. (2022) conclusively state that eudaimonia – emotional well-being resulting from an understanding of the meaning of life – is a key driver of personal growth in the context of physical literacy. Meanwhile, Schmittwilken et al. (2024) describe how children develop emotional intelligence, transcend roles and develop a positive self-image through play and decision-making. Hogan et al. (2023) demonstrate that e-portfolios can be used as personal development tools. They document progress and enhance self-efficacy and reflection on self-expression in motion. Digital tools such

as e-portfolios enable children to reflect on their movement experiences, structure their developmental pathway, and visually document their progress. This makes self-expression visible and purposeful (Hogan et al., 2023). Self-expression in physical education is not a separate part of the curriculum; it is a force that connects movement, social skills, and personal development. Child-centred pedagogy allows children to encounter themselves in movement, express themselves, and feel secure in their growth. Maintaining a positive attitude toward physical activity throughout life is absolutely possible.

Dimensions of knowledge and understanding

The section on the dimensions of knowledge and understanding in the context of PL makes several key points. These points highlight the need for holistic, experiential, and contextually relevant learning. Knowledge is not an isolated learning outcome. It is an integrated element closely linked to motivation, reflection, and the ability to make informed decisions about one's exercise lifestyle. Research clearly shows that while knowledge about health, exercise, and the body is important, it alone does not change behavior. CAPL-2 data analysis unequivocally shows that cognitive indicators such as knowledge of aerobic fitness and physical activity guidelines were not statistically significantly associated with children's behaviors such as active exercising (Stage et al., 2025). The authors make a strong case that motivation and decision-making capacity are critical factors in translating knowledge into practical action. Godbout (2023) and Wong (2022) definitively show that knowledge becomes influential when it is acquired in authentic contexts, such as integrating physical education into other subjects or using situated learning approaches. In such situations, students acquire theoretical knowledge about movement and health, as well as the skills to plan, evaluate, and manage their physical activity, which contributes to long-term understanding. Santos et al. (2022) definitively extended the knowledge dimension to include a socially critical perspective. The emphasis is on an interdisciplinary approach where knowledge is linked to real life, self-regulation, health behaviors, and community participation. The authors make a clear and unambiguous point: skills that help young people assess risk, think critically, and apply knowledge in different contexts are essential to physical literacy. Hogan et al. (2023) definitively show how e-portfolios can facilitate learning through self-reflection and personalised documentation of experiences (Hogan et al., 2023). This method provides an opportunity for students to develop technical literacy and an understanding of the interrelationship between health and movement. It also helps students develop a stronger connection to their own body and movement identity. In contrast, Wilkie et al. (2023) definitively show that even without theoretical exploration of the PL concept, teachers intuitively create an environment of understanding based on positive experiences, attitudes, and reflective learning (Wilkie et al., 2023). Teachers assessed students' development in terms of achievement, behavior, dedication, and understanding of the importance of movement in life.

In conclusion, knowledge and understanding in the context of PL cannot be reduced to the acquisition of facts. It includes the ability to understand oneself in movement, to

understand one's own needs and health status, to reflect on experiences, and to apply this knowledge to real-life situations. As Godbout (2023) definitively states, this integration of knowledge also promotes learner autonomy and self-direction, which are central elements in the concept of PL.

Conclusions

The concept of physical literacy (PL) is most commonly framed through Margaret Whitehead's influential definition, encompassing motivation, confidence, physical competence, knowledge, and understanding, all oriented toward lifelong engagement in physical activity. Motivation is a dynamic catalyst for the development of PL, aligning with the principles of learner-centered pedagogy. Connecting a child's lived experiences with a thoughtfully structured educational environment is key. This motivates active, self-directed, and knowledgeable participants in physical activity.

Confidence and movement competence evolve as living processes, continuously shaped by children's encounters with both achievement and challenge. Their development is intricately tied to the surrounding environment, the pedagogical strategies employed, and the degree of agency children are given in their learning journeys. These elements signal physical ability and reflect the emotional resonance a child develops with movement – both of which are essential foundations for a vibrant, healthy life.

Physical literacy emerges through rich interaction with spatial and social environments. A child-centered pedagogy – emphasizing autonomy, intrinsic motivation, and supportive relationships – creates conditions in which children actively co-construct their physical experiences. The ecological context that shapes this growth is environmental design, adult facilitation, and prevailing societal attitudes.

It is vital for children's emotional well-being, learning efficacy, and sustained engagement in physical activity that they foster a strong sense of self within this system. It is clear that approaches that prioritize student choice, meaningful feedback, psychological safety, and personal growth most effectively nurture self-concept in physical education settings.

Self-expression within PL is more than a physical display; it's a profound avenue through which children communicate emotions, explore identity, and build social connections. Movement becomes a medium for self-knowledge and relational understanding, establishing self-expression as a pivotal element of a child-centered educational approach.

The dimension of knowledge and understanding within PL extends beyond cognitive recall or technique. It encompasses the child's ability to interpret their own physical experiences, recognize personal needs and health statuses, and apply insights to real-world contexts. This integration of embodied knowledge fosters autonomy and reflective practice – cornerstones of child-centered pedagogy – and equips learners with the tools to navigate physical activity and life itself.

Future research on physical literacy (PL) must prioritize three interconnected directions. First, we must explore the ecological and environmental contexts shaping PL. We need to understand how spatial design, adult mediation, and cultural values

influence children's physical experiences across diverse settings. Second, we must delve deeper into embodied knowledge, self-expression, and learner autonomy to understand how movement fosters identity, emotional development, and reflective practice within child-centered pedagogies. Third, we must innovate assessment approaches to capture the multidimensional nature of PL. Longitudinal studies will illuminate developmental trajectories over time. We must also pay greater attention to inclusion by examining how children from diverse and marginalized backgrounds experience and construct physical literacy. Collectively, these research directions will advance a more holistic, equitable, and sustainable understanding of physical literacy in early childhood education.

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CONSOLIDATION OF PROSPECTIVE VALUES WITHIN THE UNIVERSITY OF THE REPUBLIC OF MOLDOVA

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ABSTRACT

The consolidation of prospective values in the university has become a perspective in the training of future specialists, when we are constrained by the accelerated pace of changes, technological development, innovations, globalization with its effects, etc. The global crisis increasingly highlights the need to carry out the analysis of prospective values, when the risks that arise in various fields present evidence that prospective values are not only a prerogative of the educational system, but also draw attention to the need to combine the efforts of social entities. For these reasons, our research identifies and reveals contributions regarding the connection of prospective education through its values to educational policies, advocating for it to become decisive in the activity of educational institutions in the Republic of Moldova. And, the directed correlation of the evolution of the higher education system with the socio-economic environment at the national and global levels claims the need to consolidate the prospective values of education.

Thus, the purpose of the research is focused on the consolidation of prospective values in the university setting, which has become one of the key issues of contemporary pedagogy, achieved through the analysis of the specialized literature in the sense of identifying prospective values, the analysis of the National Qualifications Framework for the fields of university training, and the substantiation of prospective axiology as a need in initial university training in the Republic of Moldova. As a result, the prospective axiological referential was consolidated and substantiated, which will lead to the formation of the prospective personality in the university setting in the Republic of Moldova. By developing the values of the prospective personality, we have a chance to rely on the sustainable development of the 21st-century society and promote planned change, instead of being able to quickly adapt to chaotic change in society.

Keywords: *anticipation, finality prospective personality, prospective value, value, value category*

Introduction

The need to strengthen the prospective referential is an indispensable requirement for the process of professional training for the present and the future when we are constrained by the accelerated pace of changes, technological development, innovations, etc.

In this regard, UNESCO highlights sociological, ecological, and technological trends that change education systems that must adapt, noting that education has the greatest potential for transformation to shape a just and sustainable future, coming up with the recommendation “to build a new social contract for education, which will meet the future needs of humanity (Future of education. UNESCO, 2021). As a solution, policy documents such as the “*Education 2030*” *Strategy of the Republic of Moldova* emphasize that the cultural and mentality component is essential for any change/development process but also stipulate the need to “rethink the role of education, learning, and knowledge in light of the challenges and opportunities, of the anticipated, possible and preferred future” (Lungu & Silistraru, 2021). The document stipulates the need for factors that determine the formation of a strategic vision and the value axes on which this document is based: quality sustainability, accessibility, adaptability, and prospective (Education 2030 Development Strategy). At the same time, the *Education Code of the Republic of Moldova* (2014) provides for the promotion of general human values, as a strategy for humanizing the human. We note that, although different formulations are used, all the policy documents examined highlight the importance of prospective values in the accelerated pace of changes.

The global crisis increasingly highlights the need to analyze prospective values, when the risks that arise in various fields, provide evidence that prospective values are not only a prerogative of the educational system, but also draw attention to the need to combine the efforts of social entities. For these reasons, our research identifies and reveals contributions regarding the connection of prospective education through its values to educational policies, advocating for it to become decisive in the activity of educational institutions in the Republic of Moldova. And, the directed correlation of the evolution of the higher education system with the socio-economic environment at the national and global levels claims the need to consolidate the prospective direction of education. Thus, we *assume* that the consolidation of prospective values in the university framework is possible if their efficiency for the present and future is proven.

By the research hypothesis, was set ourselves the goal of the research, which is focused on the consolidation of prospective values in the university setting, which has become one of the key issues of contemporary pedagogy. To achieve the research goal, was set ourselves several objectives:

- analysis of the specialized literature in terms of identifying prospective values;
- analysis of the National Qualifications Framework for the fields of university training, and;
- prospective axiological substantiation as a need in initial university training in the Republic of Moldova.

Literature analysis

The literature consulted highlights the central role of **prospective values** in shaping higher education and professional training in the Republic of Moldova. Values, defined as symbolic systems guiding human behavior (Marcoci & Silistraru, 2020), have cognitive,

affective, and behavioral components that can be educated (Paladi, 2013). Prospective axiology emphasizes anticipation and adaptation to future challenges (Danaher, 2021), while recognizing that values are subject to transformation (Van de Poel, 2021).

At the **international level**, UNESCO (2021) calls for a “new social contract for education,” underlining anticipation and adaptability as essential for sustainable futures. Similarly, the OECD (2018) advances the Anticipation–Action–Reflection cycle, emphasizing critical thinking, creativity, and innovation. The EURYDICE Survey (1999) also stresses planning and adaptation to change, while Godet (1994) defines strategic foresight as anticipation and action.

At the **national level**, the *Education Code of the Republic of Moldova* (2014), the *National Qualifications Framework* (2017), and the *Education 2030 Development Strategy* (2023) promote prospective competences such as planning, decision-making, innovation, and adaptability (Lungu & Silistraru, 2021). However, gaps remain: for instance, *risk management* and *time management* are insufficiently integrated, despite their recognition as crucial prospective values (Kahneman & Tversky, 1979; Cuznețov, 2010).

Pedagogical literature reinforces these values. Dator (2002) and Hideg (2007) stress anticipation as a future-oriented skill; Antonese (2005) and Antoci & Borozan (2023) highlight planning and forecasting; Cojocariu (2003) and Cristea (2017) emphasize adaptation and innovation; Silistraru (2006) associates education with creativity and design; and Ojovanu (2020) identifies information as a determinant of value orientations in contemporary society. In economics, Cuciureanu (2013) and Vârzaru & Bocean (2024) underline innovation as a driver of development.

Information and knowledge management are widely recognized as prospective imperatives. Ciolan (2008) distinguishes between the “information society” and the “knowledge society,” while Ghicov (2021) highlights the use-value of information in educational contexts. Time management, viewed as both resource and value, is considered fundamental in accelerated change (Cuznețov, 2010).

The literature converges on the idea that **prospective values – anticipation, adaptability, innovation, information and time management, risk management, and decision – making – constitute the foundation of prospective education and professional training** (UNESCO, 2021; OECD, 2018; Lungu, 2021). While Moldovan policies formally recognize these dimensions, their curricular and institutional integration remains incomplete, requiring alignment between international foresight frameworks and national higher education strategies (Guidance Note, 2015; Employment Strategy 2017 – 2021).

Methodology

The study was focused on the theoretical analysis of the National Qualifications Framework of the Republic of Moldova (2017), centered on the prospective values developed by the institutions of advanced higher education in the Republic of Moldova. We also examined two major documents from the legislative system of the Republic of Moldova regarding the Education Strategy 2030.

The research methodology corresponds to the object, purpose, and sources mentioned and consists of theoretical methods: scientific documentation, theoretical synthesis, systematization, and comparison.

To substantiate the prospective axiological referential, the specialized literature was analyzed to identify prospective values and argue their need and value in university professional training in the Republic of Moldova.

Results

The prospective axiological foundation involves understanding the values and principles that underlie future orientation in various areas of human life and activity. Prospective axiology refers to the evaluation and prioritization of educational values in the context of anticipating and shaping the future.

Values are evaluative criteria and standards of judgment to be able to value things, and ideas with their quality of being or not desirable, of representing what is beautiful, just, true, etc., they refer to what is significant for the meaning of human life. The value category is still defined today as an element of a symbolic system that serves as a criterion for choosing between the orientation alternatives open in a given situation (Marcoci & Silistraru, 2020).

Values are not “directly observable, contain cognitive, affective and conative elements, do not operate independently of the individual and the social field, refer to standards of the desirable, hierarchically organized in the personality system and relevant to real behavior. Similar to any other type of belief, value has three components: cognitive, affective, and behavioral” (Paladi, 2013) that can be educated.

If we accept the idea of values as standards of conduct, then values are natural psychological realities whose realization is based on human development and external social realities, which the individual must internalize.

Opting for an education focused on prospective availability, the creative adaptation of the personality to the constantly changing social and professional context, is most effectively achieved through the prism of values. However, investigation efforts, in which a diversity of sources is used, allow the outline of several issues of the trends of the evolution of contemporary axiology, and “axiological futurism” (Danaher, 2021), which have a certain importance both immediately and in perspective, because we should take into account the possibility of value change (Van de Poel, 2021).

In our opinion, the starting point of the formation of the student’s personality must be the prospective value referential, represented by the system of values on which his behavior in life, in general, and in professional activity, in particular, is based.

Our attempt to constitute a prospective value referential was based on the analysis of normative documents and various researchers in the field. This essentially led to the extraction of prospective values, which we realized were not a result of the conceptualization of the prospective value referential.

Prospective values signify the estimation of future benefits offered by a project, action, or decisions, reflected by the person's current expectations and awareness based on available data, specific to the context, grounded in the referential of future requirements, manifested through the cognitive, affective and psychomotor domain of the person, oriented towards the evaluation of their long-term consequences.

Essentially, prospective values are evident in the vision of both researchers in the field and national and international educational policies.

Table 1 Prospective value referential

Area	Authors	Values
International politics	UE Commission. EURYDICE Survey (1999)	anticipation, planning, adaptation to change, and decision – important in the prospective;
	OECD (2018)	anticipation, design, reflection, action;
National politics	National Qualifications Framework (2017)	decision-making, planning, and anticipation in preparing the future personality;
	Employment Strategy for 2017–2021	anticipation and adaptability as a necessity in qualification;
Pedagogy	J. Dator (2002)	anticipation;
	V.M. Cojocariu (2003)	change;
	I. Antonese (2005)	planning, forecasting, and adapting to change;
	N. Silistraru (2006)	change, design, creativity;
	E. Hideg (2007)	anticipation;
	D. Antoci & Borozan (2023)	planning;
	M. Bocoş (2016)	anticipation, adapting to change;
	S. Cristea (2017)	adaptation, innovation-creation ;
Psihology	L. Cuzneţov (2010)	time;
	V. Cojocar (2010)	innovation for the future of education ;
	V. Ojovanu (2020)	information;
	D. Gilbert & T. Wilson (2007)	anticipation;
	A. Tarnovschi & I. Racu (2017)	
Economics	D. Kahneman & A. Tversky, (1979)	risk management, decision making;
	M. Godet (1994)	anticipation, planning, strategic orientation or direction towards the future;
	Gh. Cuciureanu (2013)	innovation.

From Table 1, we conclude that both policy documents and the labor market implicitly require the presence of prospective values in employee behavior, but the concept of professional training does not reflect this behavioral dimension.

Thus, the following prospective values were identified: information management, time management, value for change, innovation, anticipation, design, direction, risk management, and decision-making.

Analysis of the National Qualifications Framework from the perspective of the development of prospective values

To determine which prospective values identified in Table 1 are designed to be formed in the university setting, the National Qualifications Framework (2017) was analyzed. The ranking of general competencies is presented, which essentially highlights prospective values. Following the analysis of the aforementioned document, Table 2 was synthesized and developed.

Table 2 Identification of prospective values by areas of professional training

Prospective Values	General domain	Domain
Planning	I. Antonese (2005)	planning, forecasting, and adapting to change;
	N. Silistraru (2006)	change, design, creativity;
	E. Hideg (2007)	anticipation;
	D. Antoci & Borozan (2023)	planning:
	M. Bocoş (2016)	• anticipation, adapting to change
	S. Cristea (2017)	• adaptation, innovation-creation
	L. Cuzneţov (2010)	• time
Adaptation	Humanities Science	History
	Political Science	Political Science
	Natural Sciences	Ecology
	Social Sciences	Sociology
	Social Welfare	Social Welfare
Creation and innovation	Humanities Science	Modern and Classical Languages, History
	Political Science	International Relations
	Communication Sciences	Information Sciences
	Natural Sciences	Meteorology, Environmental Protection, Soil Sciences
	Exact Sciences	Physics, Chemistry, Informatics
	Chemical Technology and Biotechnology	Chemical Technology

Prospective Values	General domain	Domain
	Engineering	Industrial Engineering and Technologies, Transportation Engineering and Management, Mechanical Engineering, Energy, Electrical Engineering, Electronics and Communications, Systems and Computer Engineering, Transportation Engineering and Technology, Food Technology, Textiles, Architecture and Urbanism, Construction, Cadastre, Biotechnologies, Transport Services
Provision	Political Science Social Sciences Natural Sciences Economics	International Relations Humanities Anthropology, Sociology Ecology, Geology, Biology, Meteorology Statistics and Economic Forecasting, Cybernetics and Informatics
Information management	Social and human sciences Political sciences Communication sciences Natural sciences Exact sciences Engineering Economics	Modern and classical languages, History International relations Information sciences Geology, Ecology, Meteorology, Environmental protection Informatics, Chemistry Services Transport Business and Administration, Cybernetics and Informatics, Mercology and Trade
Decision making	Humanities science Social Sciences Political Sciences Natural Sciences Economics	Philosophy, Anthropology Sociology Political Sciences, Public Administration Geology, Biology Business and Administration, Statistics and Economic Forecasting
Risk anticipation	Natural Sciences	Biology Tourism
Time management	Engineering	Chemical Technology and Biotechnologies

Table 2 summarizes the analysis of the Republic of Moldova's National Qualifications Framework (NQF) and identifies the presence of prospective values focused on *planning/design, problem-solving, adaptation to change, decision-making, and information selection* in several specialties.

In several specialties (International Relations) anticipation/forecasting and (Meteorology, Physics, Chemistry, Chemical Technology, and Environmental Protection) *creativity, and innovation* were identified, although the value of *time management, and risk management* was not identified in any specialty.

Table 2. reflects the fact that in NQF we identify the emphasis placed on the consistency of student training according to the requirements of the labor market. The specialties related to the economic field are oriented toward some values (design, innovation, information management, decision-making) and the specialties in the technical field towards others (design, creation, and innovation). The fact that several specialties focus on the formation of the design value, formulated under various aspects (planning, project development, etc.) is appreciable, but less often is *risk anticipation* identified as an example in the specialty of Biology, the field of natural sciences, fields that are mentioned with a high level of risk from a prospective perspective.

At the same time, was noted that the aforementioned document highlights the knowledge necessary for obtaining the qualification, which in the current conception of higher education in the Republic of Moldova is perceived as a prospective system. Therefore, the course of the process of internalizing values must be operationalized in a descending line, from the delimitation of prospective values to the value-supported vocational training competencies described in the NQF, transposed curricularly and operationalized at the process level.

The finding of some prospective values in the NQF, but also the lack of others, highlights the confirmation only of the prospective character emphasized in vocational training (competencies that will be applied in the future). The NQF analysis also highlights the aspect that confirms the fact that “professional and research activity is centered according to the current requirements” (Guidance Note, 2015), a fact that claims the need to include prospective competence in the NQF. The same situation was identified in the information note of the Education 2030 Strategy of the Republic of Moldova (which, in essence, focuses on objectives related to improving the infrastructure of educational institutions (Objective 6), etc.

Although there is a sense of dissonance between the skills projected in the NQF and the National Employment Strategy, we note that no strategies are provided to manage this situation, either by establishing the specialty of Labor Market Analyst or by establishing within the university strategic directions for anticipating skills, specialties, etc.

In this vein, we consider that forming a personality endowed with prospective values is necessary regardless of the social context and the level of economic development.

Discussion

To confirm the effectiveness of prospective values, we consider it important to highlight their need for the present and the future.

With the development of information technologies, access to information has become open, but a lot of information has also appeared that needs to be analyzed, structured,

managed, etc. From this, we deduce that *information* is a prospective value in terms of quality and quantity. Therefore, a special role in the evolution of contemporary value processes, a fact that has been extremely emphasized since the second half of the 20th century, belongs to information. At the same time, the acceleration of the issuance and perception of information and communication at the interpersonal and civilizational levels dominates “the conditioning of today’s value orientations. The frequent and intense exchange of information determines the behavior of the individual in society, placing it predominantly in the field of utilitarianism, of the moment or perspective, to the detriment of the ponderable spiritual evolution of spiritual-sacred and even aesthetic-artistic experiences and re-experiences” (Ojovanu, 2020).

Because the curricula are characterized by high informational diversity, with traditional, exclusively inherited issues and problems generally imposed by some changes or innovations, the emphasis is on *selecting information*.

Information management – the recognition, appreciation, and appropriate application of the information we have at our disposal at a given time, to solve problems and make optimal decisions, allows for the efficient exploitation of information: information identification/search skills; information evaluation and processing skills; information efficient use skills. In this context, “the information society or digital society is that society in which the creation, distribution, use of information and has a significant impact on the economic, political, social, cultural, etc. environment (Ciolan, 2008), at the same time the knowledge society is “fundamentally necessary to ensure an ecologically sustainable society, given that without scientific knowledge, technological knowledge and their management, these goods, organizations and technological and economic transformations necessary to save humanity from disaster in the 21st century will not be able to be produced” (Ciolan, 2008).

Considering that information is integrated into a knowledge base and is used to achieve certain goals, we find that the main value of information is that of use in achieving certain goals, and novelty, order, and significance are subsumed into it. (Ghicov, 2021). Here, *time management* is also seen as another prospective value.

The concept of *time* as a primordial substance has as its theoretical support the problem of time as a resource (Cuznetov, 2010). It is taken into account that time is a limited resource for both the individual and society. According to this concept, it is considered that economic goods will have an objective value given by working time. Therefore, *time represents the constituent of a very important element of the economic good*, namely the economic value, an idea that led to the identification of time as an important value in the accelerated pace of changes.

Approaching time as a resource is not only an economic theme but also has, in the same vision, connotations related to the level of mentalities, the level of opportunities offered by society, and the correct understanding of freedom – indestructible elements of education and its purpose.

Of the multitude of usable resources, time is the only one that has two incompatible qualities: it is an *inexhaustible resource*, but at the same time, *non-renewable*. Even though

it is a resource that is within everyone's reach, and access is unrestricted and equally distributed to everyone, time is still the most precious of resources. The nature and evolution of a society depend, to a large extent, on how it is used. Time is thus the catalyst for change so it requires being conceived in different stages of a certain factor. It can be chaotic or planned, and it can be positive or negative. Change always has two stages. One is the previous or old stage, and the other is the new scene (after the change). Knowing both stages is a prerequisite to confirming that a change has taken place, by evaluating the differences between the stages.

Value for change reflects the modification of a situation, a product, or a service while aiming at growth, development, or benefit, constituting value in itself.

Innovation as value. Product, process, marketing, and organizational innovation include information, creativity, and initiative to obtain economic value, and change/innovation. Innovation is presented through the ability to encompass economic value from the invention to capitalize on change and transform it into an opportunity (Vărzaru & Bocean, 2024).

Based on prospective axiology lies the process of objective evolution of the fields of education, manifested through differentiation and integration. We conclude that “the planned, oriented development of creativity, of the moral-spiritual education of the personality is necessary. Essential changes are necessary for human formation as a supreme value (Papuc, et al., 2006).

Importantly, the OECD found that “future-ready students will need to apply their knowledge in unfamiliar and evolving circumstances. To do this, they will need a wide range of skills, including cognitive and meta-cognitive (critical and creative thinking, learning to learn, and self-regulation); social and emotional skills (empathy, collaboration); and practical and physical skills (using new information and communication technology devices)” (OECD future of education and skills 2030).

Approached from an educational perspective, the following **prospective values** were proposed as the purpose of the research for the formation or development of:

Anticipation, as a purpose, is a necessity of the contemporary personality to find concrete and rapid solutions in solving the multiple apparent problems in everyday life (anticipation of changes, risks, and consequences). Deepening the issues and probability in the contemporary economic, social, political, and cultural structure generates risks and a special receptivity to the respective problems. Anticipation includes responsibility in influencing and possibly controlling future events, respectively, it can be considered one of the components of prospective competence (Lungu, 2021). Today it is not enough just to anticipate and forecast the changes produced in one area or another of society, there is a need to intervene to cause desirable effects or to avoid undesirable ones, in the sense of avoiding risks.

Another value emerges from anticipation – *risk management*, which essentially substitutes: the possibility of receiving the expected result; the possibility of unexpected results; the possibility of being removed from the chosen goal; material, economic, moral losses, etc., depending on the choice of alternative; positive and negative consequences,

possible in performing certain actions in conditions of indecision for the subject at risk (Lungu & Silistraru, 2020). Risk identification is carried out continuously, and its reduction is achieved through scientific programming and redesign.

To develop and form the value of risk management, it is necessary to achieve several objectives: identifying potential risks in personal actions; determining methods for reducing/avoiding risk; planning actions to minimize risk and time management; deciding on actions to be taken as a result of awareness of the previously minimized risk; evaluating actions taken based on the minimized risk; establishing problems and planning solutions/solving them.

Another prospective value is *planning*, which has several stages. The first stage is anticipatory and involves the ability to develop prospective studies, forecasts, strategies and policies, plans, programs, and projects in order to establish well-determined tasks for carrying out the proposed activities.

Decision-making is another stage of planning that is determined by action. It is necessary both now and in the future to identify alternatives. Prospective decision-making is applied to the formulation of objectives, planning, scientific and technical research, and innovation functions (Lungu, 2021). Prospective decisions are strategic.

Intervention for change involves, to some extent, planning for change – clear objectives, goals, and realistic deadlines for developing solutions for crises in education and tomorrow’s society, for decision-making, and for transferring strategy into action. Today, strategy requires not only acting on a process, or phenomenon, but for it to be action, for adapting behavior, for inventing and innovating, and for developing sectoral and national development policies and strategies.

Innovation is highlighted by the “Education 2030” Strategy, but it is placed in the category of transformative skills, meaning that together they address the growing need for young people to be innovative, responsible, and aware by creating new values, reconciling tensions and dilemmas, and assuming responsibility. Innovation can provide vital solutions to economic, social, and cultural dilemmas. To prepare for 2030, people should think creatively, and develop new products and services, new jobs, new processes and methods, new ways of thinking and living, new sectors, new business models, and new social models. It is important to mention that innovation is based on creative, repetitive thinking, involving a change plan. Thus, it will facilitate the function of *anticipation, planning, innovation, and active involvement in social life* (Education 2030 Development Strategy, 2023)

Adaptability to change is characterized by rapid learning, this is because you know how to adapt, trying new things and thus stimulating the ability to solve problems in different circumstances (Lungu, 2021). For example, adaptability – a soft skill, relies on other soft skills to apply them without a doubt successfully. You must have the ability to learn and immediately apply in practice. In addition, you must remember what you have discovered so that you can identify trends and make decisions.

Depending on scientific, technological innovations, etc., the need for another value arises, namely *information management*. It is considered that the information age

generally includes three major periods: the information society, the knowledge society, and the society of consciousness. The knowledge society will provide the foundations of a future society. Information management (Lungu & Silistraru, 2021) represents the identification, evaluation, and appropriate use of the information that we have at our disposal at a given time, to solve problems and make optimal decisions. It includes the development of the following skills: identification of information, efficient exploitation of information, evaluation, processing, and efficient use of information.

In our opinion, criticism and permanent review of information are necessary for the safety of the curricular content to be appropriate to the destination and the time.

With the accelerated pace of changes, the need for the value of *time management* appears as a new resource resulting from the consequence of speed, which causes accelerated wear of knowledge, which justifies the need and training of young people for tasks that they cannot accurately predict, but which influence their decisions over time. For effective time management, it is necessary to focus on objectives, prioritization, or delegation, but also on work. It is very important to respect a balance between all elements for effective time management – a perspective related to the success of personality formation (Lungu, et al., 2022).

Direction is another prospective value that can be achieved in several aspects depending on both time – future and essence – personality development.

It is important to note that the list of prospective values can continue depending on society's evolution, the accelerated pace of change, and the labor market's demands.

Research in the field and our findings allow us to highlight the important role of value content in the structure of personality. The internalization of values is a progressive process, dependent on the development of the human psyche. In the context of professional training, students must understand that behavior must be manifested to certain principles and values assumed individually and that determine attitudes. Certainly, attitudes do not manifest themselves in behavior per se, but according to their moral value, and when attitudes come into contact with the laws of society, internalized, stable, and valorizing attitudes become values.

An anticipatory character is an attitude that can anticipate the social or actual life of the personality. It is important to understand that to change and develop the economy, politics, science and culture, technique and technologies, and human spirituality, it is necessary to change and develop the consciousness and behavior of the personality in a planned way. In the postmodern era, the change and development of society have accelerated, becoming almost uncontrollable. This endangers humanity's global destiny.

The given situation reveals a basic problem of our society: awareness of people's problems and behaviors, which, in essence, must orient us towards conscious change.

At the level of a fundamental pedagogical concept, the purpose reflects the prospective nature by anticipating the permanent evolution of education, confirmed in the short and long term, in the context of the permanent optimization of the relationships between the requirements of the present and especially future society (Cristea, 2016). From the above, we observe the prospective nature of the purposes of education which are

explained as predictions or anticipation of the projected result, or in other words “promoting the development of high-quality foresight work” (Hines, 2021). The purposes of education are also intended as predictions regarding the way of achieving education, in a certain time interval with a directing and regulating role for the educational action. They define the value orientations of education at all levels of the education system (Cristea, 2016).

In this sense, from the point of view of education’s functions, the prospective orientation obliges the remodeling and adaptation of the learning contents at the level of their psycho-pedagogical organization, transmission methods, etc. Student training must be carried out so that graduates are able to quickly integrate into a changing world and respond adequately to unpredictable situations.

Orientation towards values is a complicated factor in the personality structure, the main function being the regulatory one for the prognosis of behavior, from this perspective, it is necessary to orient it towards the formation of prospective purposes.

The variability of purposes is noted through a varied spectrum of discipline-specific acquisitions, structured according to knowledge, skills, and attitudes and formulated in specific terms, to develop a prospective personality which is conditioned by the fact that solving global problems and challenges (Global challenges, 2024), rapid changes, and solving professional problems are closely related to the need for prospective values and are oriented towards achieving the professional goal combined with AI (Huzina, Sheikh, 2024) with actively participatory and anticipatory methods, which are based on soft skills addressed as highly demanded in the future are communication skills, problem solving, creativity, critical thinking, teamwork, and lifelong learning (Polakova, et al., 2023).

The needs regarding prospective values are materialized in: the development of normative acts regarding the inclusion of prospective values in the basic curriculum of the educational system; and the development of methodological guidelines regarding the design of the curriculum for university education, which provides that the university graduate acquires prospective values.

The theoretical contributions and the applicability of value functioning in the conditions of interdisciplinarity constitute an important conceptual-existential basis in favor of the development of prospective axiology. Emerging from an “amalgam mass” of values (universal and specific to the educational sphere), prospective axiology, not at all finalized as an integral system, can nevertheless be a benchmark, as a structure, and as a value treasury, for other fields. Only through practical activity does the perception and conception of values, their objectification, and the realization of the axiological potential take place. This reasoning constitutes the starting point of our vision regarding initial professional training from a prospective perspective, developed and reflected in Figure 1.

Professional training. Essentially, each specialty is represented by a system of values that is interdependent with the system of professional competencies – the confirmed ability to use personal and social knowledge, skills, and attitudes in work or study situations and in professional and/or personal development.

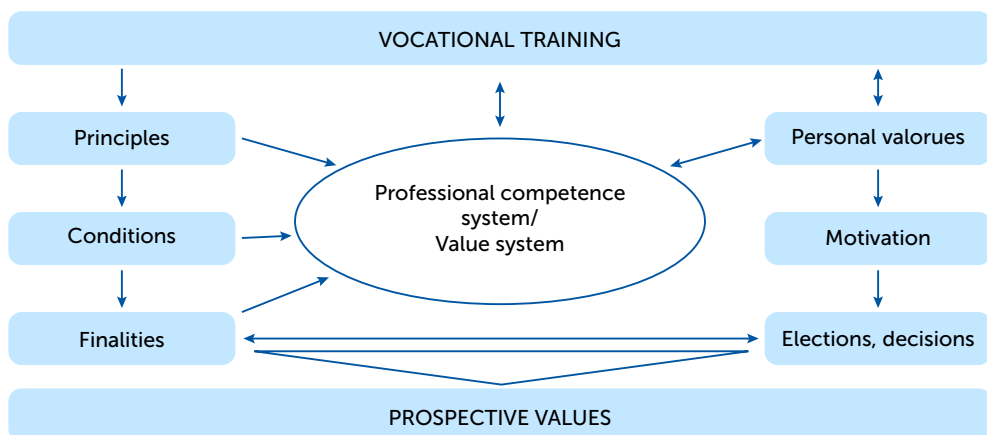


Figure 1 Formation of prospective values in the professional area

In essence, professional skills are formed by respecting certain principles and depending on certain conditions for achieving certain goals. However, to develop the values represented by professional skills, personal values are important, which are interdependent on interests and professional values.

As mentioned above, we are focused on various values, and the felt fact of the educational crisis both globally and nationally, orients today's universities to manage the challenges: the explosion of knowledge, the diversification of aspirations, and the needs arising from them, but also to institutionally highlight the need for prospective values. Sustainable development, economic growth, and employment achieve reforms, research, development, and innovation policies, actions following research and innovation policies: setting priorities and identifying balance in the use of available resources; involvement in the formulation and implementation of science policies, etc. (ERAWATCH).

In general, there has been an increasing focus on memorization and testing in education, including in the early years, which leaves no room for active exploration (Herodotou, et al., 2019). Many legislative frameworks detail specific competencies for future citizens (Stevenson, 2002). These refer to critical thinking, problem-solving, literacy skills, multilingualism, STEM, digital, social skills, etc. Thus, educational practitioners should identify and use certain ways of teaching and learning, while avoiding others. The relationship of pedagogy with the development of 21st-century skills, innovations, and adaptation is important because pedagogues are the ones who educate and will have to form these invaluable human qualities in their descendants (OECD, 2018).

Much of human literacy refers to "21st-century survival skills – including creativity, collaboration, communication, adaptability, and initiative. And the schools of the future will focus much more on future fluencies, new basic skills, 21st-century survival skills and habits of mind" (Skills anticipation, 2013).

At the value level, students represent the indicator of a society in transformation and disorganization, where the only way of life they know is based on change.

There is a connection between this major desire of 21st-century societies and the activity of training the student as a human being and as a future human resource, overcoming the crisis, and acquiring new conditions for further development, for these reasons, they must be trained prospectively.

The prospective personality of the student refers to a mental and behavioral orientation that looks to the future, involving prospective competence and prospective values. A person with a prospective personality tends to be concerned with long-term goals and how present decisions will influence the future.

The profile of the prospective personality, from a professional perspective, is understood as a set of technical skills interspersed with prospective transdisciplinary competence, which can anticipate future changes, but also propose development directions. This involves a series of specific traits and behaviors:

1. **Planning:** People with a forward-looking personality are often good planners. They set clear goals and develop detailed plans to achieve them.
2. **Anticipation:** These people can anticipate possible future problems and opportunities. They consider the long-term consequences of their actions and try to prepare for various scenarios.
3. **Risk Management:** People with a forward-looking personality are often good at managing risks. They evaluate the potential risks and benefits of different actions and take steps to minimize negative risks.
4. **Perseverance in maintaining motivation and long-term focus**, even in the face of difficulties or setbacks.
5. **Ability to learn from experience:** People with a forward-looking personality are often good at reflecting on past experiences and learning from them to improve their future decisions.
6. **Flexibility:** While they are future-oriented, these individuals are also able to adapt to unexpected changes and adjust their plans accordingly.

Examples of behaviors of a person with a forward-looking personality may include:

- Setting career goals and developing an action plan to achieve them.
- Investing in the future.
- Participating in personal and professional development programs to prepare for future opportunities.
- Constantly evaluating progress against established goals and adjusting plans according to changes in the environment.

A prospective personality involves a proactive and anticipatory approach to life, focused on planning, anticipation, and preparation for the future. This can be an important asset in career and personal life, helping individuals achieve their goals and adapt to inevitable changes.

The prospects for implementing prospective values in the university training framework becomes a key factor in the development of prospective personality, but also confirms the hypothesis: we assume that the consolidation of prospective values in

the university framework is possible if their effectiveness for the present and future is proven and the goals have been achieved.

Conclusion

There is a need for prospective personality training by integrating prospective values within university disciplines, targeting the development trends of all specialties. Rethinking educational paradigms is already a topical task, which needs to be related to the current and prospective requirements of society thus highlighting the importance of prospective education for focusing on the prospective values and prospective formation of the personality. These can

be achieved by orienting the university towards a new way of education, which will ensure the development of the prospective values to the personality and the possibility to face unforeseen events, through prospective thinking, strategic planning but also future orientation. Knowing the specifics of prospective personality formation, we have chances to rely on the sustainable development of 21st-century society, through the optimal development of prospective thinking and intervening from the perspective of the future, to promote planned change, instead of being able to adapt quickly to change chaotic in society.

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HISTORY OF TRANSLATION EDUCATION IN LITHUANIA: VARIOUS DIRECTIONS AND THE EMERGING NEWEST TRENDS

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ABSTRACT

The research question – what is the history of Lithuanian translation education and what are its emerging newest trends? The aim of this study is to provide an overview of various directions of Lithuania's translation education history and highlight its emerging newest trends. The research methodology includes historical overview of literature based on the newest trends (Snyder, 2019). The data processing methods: analysis and synthesis (Sandhiya, 2016; Tidikis, 2003).

During the interwar period (1918–1940) translation in Lithuania was a hidden approach and foreign language literature was translated by writers or priests (Leonavičienė, 2018; Malažinskaitė, 2015). Progress of translation and its science was blocked by the Soviet occupation (1940–1990) (Leonavičienė, 2018). There was a renewed interest in translating Western authors' works only after Lithuania regained its independence and became a member of the EU and the NATO (Šalčiūtė-Čivilienė, 2011). Universities then expanded their translation study programmes. During that time, a postgraduate translation study programme at Vilnius University appeared. Since 2020, translation education is marked by new competences and the appearance of generative AI. Post-editing competency development for translators is highly prioritised (Levanaitė, 2021). Therefore, translation education needs to be changed to ensure adoption of generative artificial intelligence. Thus, it is possible to argue that translators of the future will serve as translation technologists, post-editors, interpreters, guides, and teachers in general schools and language schools.

Keywords: *translation education, translation history, translators, learning, artificial intelligence*

Introduction

Translation is a linguistic and textual process where a text in one language is reworked within another (House, 2015). Hurtado (2019) asserts that translation is an essential function of all facets of societal life and that it is an extremely old activity. According to Urvashi (2022), translation is as old as human civilization and the third millennium BC

is when the translation activity is first mentioned. It is believed that the Romans were the first people to translate written texts. They've tried translating the Bible. Cicero and Horace were the first translators and theorists. The earliest written translations into Lithuanian as Leonavičienė (2018) claims can be found in Martynas Mažvydas's 1547 book *Katekizmas* [Catechism], which is the first book published in Lithuanian and includes a synopsis of the main ideas of translation criticism.

Along with the increase in the strength of written translations, there was a need for translation education appear. Excluding 16th century beginnings of Lithuanian translation, Lithuania had three major periods when translation and the science of translation developed in it. Leonavičienė (2018) distinguished and described two periods: the interwar period (1918–1940) and the Soviet occupation (1940–1990). The third historical period – the one that came after independence was regained. These periods were somewhat distinct and unique. Along with changes in translation, translation education changes in each of these periods.

The research question – what is the history of Lithuanian translation education and what are its emerging newest trends?

The aim of this study – to disclose the translation education history in Lithuania and its newest trends. This study will offer scientific value about the present state of translation education and aid in providing an overview of the history of translation in the 20th and 21st centuries.

Literature analysis

Hurtado (2019) claims that the practice of translation education as a means of preparing people for a particular career is a relatively new development. The 1930s saw the emergence of this kind of training, which peaked after World War II. It was not until the late 1970s that translation didactics research began to take shape, and it wasn't until the early 2000s that it solidified. According to Liu's (2013) assertion, there has been a significant surge in the institutional training of translators and interpreters from the mid-1900s, with a notable surge during the 1980s. As Sawant (2013) notices, translation education in XX century became an important course in language teaching and learning at schools. This period is marked as emergence of the development of translation research products, such as Machine Translation and Computer Assisted Translation (CAT) tools. The terms "training" and "education" are synonyms, as Liu (2013) notes, are both employed in the literature and represent some of the range of approaches to the topic. Both strategies are frequently referred to as "pedagogy". Pradita (2016) claims that the 1980s were a decade of consolidation for the then-emerging field of Translation Studies. It was the drive to establish translation as a theoretical field.

In Lithuania, its own kind of translation education was also being developed. An examination of the causes and peculiarities behind the growth of translation theory in Lithuania from the first half of the 20th century to 1990 is provided by Leonavičienė (2018). The author believes that the 20th century can be considered the "Golden Age"

of translation education, both in Lithuania and elsewhere, notwithstanding the significant attention given to translation methods throughout the 19th century. Translation education in general, professional critique, and translation theory and technique were all made possible during this time. Maskaliūnienė & Kaminskienė (2012) state that since Lithuania entered the European Union, there has been a greater demand for translators. The translation education programs were updated or added to in order to meet standards. However, new trends are now determined by translation education. It is believed that the development of artificial intelligence, improved language instruction, international travel, and studying abroad have corrected translation. As a result, not much is known about the development of translation education in Lithuania or about its current state.

Methodology

The research method – historical overview (More, 2023; Albulescu, 2018). The main purpose of the analysis of articles is to acquire better knowledge of various directions of translation education history in Lithuania and figure out what are the emerging newest trends of it are as of now. Important papers, such as articles and books, research publications are thoroughly studied and assessed.

During the historical overview, More's (2023) historical research type and studying the history of ideas is applied: This kind of research seeks to identify the ideas that were prevalent at a given period. More (2023) claims that historical research attempts to preserve the connection between the facts and the conclusions it draws about earlier occurrences, pieces of evidence, or objects. The researcher can evaluate the historical data in the light of the current circumstances, and by examining the relationship between the two, they will be able to forecast future developments that are relevant to the research question (More, 2023). One of the primary objectives, according to Albulescu (2018) is that historical data is methodically gathered and assessed to characterize, clarify, and comprehend concepts, acts, or occurrences. Studying historical concepts, procedures, or establishments can, on the one hand, help us comprehend how our existing educational system came to be and how it evolved; on the other hand, this sort of information can provide us with a strong foundation for future advancement or change in this area (Albulescu, 2018).

The two ways of data processing (Sandhiya, 2016; Tidikis, 2003) are analysis and synthesis. In this article, Sandhiya's (2016) data analysis, i.e., examining articles and books from the inside out to determine whether the message they provide is authentic is applied. Following analysis, synthesis, and generalization emerge (Tidikis, 2003). It enables the creation of compelling historical insights on translation.

The latest translation education trends were addressed using merely an overview of the newest literature. The outcomes of qualitative research are reviewed using this methodology (Grant & Booth, 2009). Grant and Booth (2009) state that an overview can offer a wide-ranging and frequently thorough summary of a subject area. In this study, an overview is used to reveal the state of translation education both now and in the future. Following this methodology, we have identified 4 periods in translation

education, and these are presented in the results section: the interwar years (1918–1940), the Soviet occupation (1940–1990), and post-restoration of independence period (1990–2020), the new period (since 2020).

Results

Translation education during the interwar period (1918–1940)

Interwar period (1918–1940) is an important period in the history of translation education. History remembers the years 1918–1940 as a time of grief and healing, of trying to preserve the past while embracing the present.

Literary translation, according to Malažinskaitė (2015), was first used during the First Republic of Lithuania (1918–1940). According to the author, during that time, there were a lot of debates and viewpoints in the periodical press on how to choose translations and how to translate them. The educational policy that was implemented at the outset of independence is directly responsible for the emergence of these issues: the rapid growth of the network of scientific and educational institutions created a demand for students to read literature in beautiful, elegant languages, and translation emerged as the most expedient means of meeting the demands of the fledgling educational system.

During this period writers, priests, teachers, linguists, and cultural figures learnt and taught others the art of translation. Leonavičienė (2018) states that the construction of European-modelled administrative structures attempted to promote harmonious national growth and Lithuania's absorption within Western Europe's social milieu throughout Lithuania's 1918–1940 Independence era, which was distinguished by positive yet arduous leaps. She denotes that during this time, there was an increase in the number of people translating foreign fiction to educate Lithuanian audiences about relatively unknown Western European, American, and Russian literature. However, she believes that the lack of formal translation programmes resulted in a cohort of translators composed of writers, priests, teachers, linguists, and cultural figures who possessed language proficiency as well as wide academic backgrounds in humanities, social sciences, or theology from Lithuanian or foreign universities. She iterates that the repeated faults in translations between 1918 and 1940 provoked substantial debate among linguists, intellectuals, and cultural activists, prompting questions about the early tendencies in translation theory in Lithuania.

One of the most significant people in translation education during this period was the linguist, Jonas Jablonskis. Even before the First World War (1914–1918) he both translated and edited the material, he also published numerous reviews of translated texts in the press, he instructed translation to students at the Panevėžys Teachers' Seminary from 1906 to 1908, as well as to students in various courses at the Voronezh Lithuanian Refugee Gymnasium starting in August 1915 (Malažinskaitė, 2015). According to Urbas (1962), Jablonskis's translations are the biggest and most important in the world of scientific terminology. No one, in the author's opinion, has provided as many Lithuanian words to convey the ideas of education, philosophy, individual sciences, education, and life as he

has. As Urbas (1962) noted, J. Jablonskis was the first to argue against some translations, insisting that the translation should be non-literal in addition to having excellent language. He imparted knowledge on the need to be careful in expressing the idea and the core of the translated topic in one's native tongue in a way that is understandable to all readers.

Another person who contributed to translation education in that period is Juozas Balčikonis, who was a devoted pupil of Jablonskis, who utilized comparable concepts only somewhat later. He translated alongside his students in Vilnius at the "Saulės" course at the Voronezh Martynas Ycho Gymnasium (Malažinskaitė, 2015). According to Urbas (1966) Balčikonis's translations are indeed a treasure trove of beautiful, lively vernacular. When he started translating fairy tales, he had already trained as a teacher of the language and was a collector of folklore.

Sofija Čiurlionienė-Kymantaitė was another important figure during the interwar period. As Malažinskaitė (2015) states one of the most well-known translation schools in Lithuanian cultural history, "Language Saturdays" were held by her and operated from 1926 to 1940. According to the author, cultural leaders and writers including Kostas Korsakas, Adomas Vincas Mykolaitis-Putinas, Kazys Boruta, and Jurgis Talmantas gathered at the literary salon. As she points out in order to convey the text in a way that retains its characteristics, the author points out that both literal and free translation strategies are disregarded during this time as altering the original: in the former case, it eliminates its characteristic features, and in the latter case, it becomes challenging to understand.

According to Narušienė and Sakalavičiūtė (2010), during this time, the teaching of poetry translation also gained prominence. A notable figure in poetic translation was Czesław Miłosz. As authors note, Miłosz came to literary translation while attending the Žygimantas Augustas Gymnasium in Vilnius, Miłosz said that this teacher was more interested in his students' skill at elegant translation than in their command of Latin. He acknowledged that his education had left a lasting impression on him, saying that while he was a professor at a US university, he conducted a translation seminar for his students in the same manner.

Based on what Leonavičienė said, during this period, there were no trained translator as educated people of various spheres performed the role of the translator. Regardless of this, a theory of translation was emerging in the country according to what she and the other scholars have said. In the interwar Lithuania, translation began to flourish as people were translating foreign works into Lithuanian to make them widely available. The translators were of various academic backgrounds as there was no formal translation study programme in Lithuania. There was an emergence of translation theoretical talk, however the WW II and the Soviet occupation that ensued halted all operations.

Translation education during the Soviet occupation period (1940–1990)

The Soviet Union's occupation (1940–1990) of Lithuania was the most difficult moment for translators, but when it was over positive changes occurred. According to Šalčiūtė-Čivilienė (2011), national literature created under the Soviet system was formed

as needed by ideology; thus, some translations were chosen to compensate for socio-economic and cultural lack of national literature. According to the author, examining the censored Soviet-period Lithuanian literature gives light on current reader preferences and publication patterns. Themes, plots, and symbols in Lithuanian literature were purposefully created and steered to coincide with ideological propaganda. Using Venclova's (1979) findings, the author contends that the quality of translations during the Soviet period exceeded that of Western translators. According to her, this was owing to an inflow of writers who, rather than compromising the integrity of their work within the dictatorship, became great translators. Translation provided writers with a professional home and a source of financial support. Among the well-known figures of this period is Dominykas Urbas, a linguist, translator, and textual scholar who has dedicated the majority of his life to studying and revising texts. Malažinskaitė (2015) claims that during the Soviet period, literature was translated by students of the "Urbo faculty" at the "Vaga" department. Pikelytė (2005) points up that Urbas enjoyed translating and was employed at Vaga Publishing House until 1971.

However, Leonavičienė (2018) states that the outbreak of World War II and the following Soviet takeover in 1940 immediately halted translation-related operations as well as theoretical translation thinking. She investigated that the Soviet administration actively sought to erase Lithuania's independent cultural past, destroying acknowledged translators, linguists, and critics while restricting or prohibiting their publications. This crackdown hindered Lithuanian translation studies and theoretical debate in this field. She finds out that during the early occupation years, the strict policy of Russification resulted in ideologically motivated translations of Russian fiction targeted at brainwashing. Leonavičienė (2018) observes that during the Soviet period, linguistic theory of translation became the only available framework in the Baltic states, including Lithuania, complying with Soviet ideological standards. She concludes that after 50 years under Soviet rule, Lithuania's restoration of independence in 1990 resulted in the cancellation of scheduled book translations and the removal of ideological control over numerous academic fields. According to her, this fresh autonomy sparked renewed interest in Western literature, producing a flurry of translations, to which translation critics quickly responded by releasing scholarly essays examining the translation of foreign literary materials into Lithuanian and vice versa. Despite the ideological change, some academics held to linguistic translation theory. Lithuania's incorporation into Soviet Union made translations produced in Lithuania ideologically coloured and halted the progress of a superior translation theory. Translations under the Soviet occupation was coloured by propaganda. However, the newly acquired independence renewed interest in Western author focused literary translations and Western translation tradition.

Although the first university-level translation studies appeared at this time, the translation education of the time was centred on ideological principles. Vilnius University, which began offering a specialized course in creative translation in 1971, which is credited by Navickienė (2017) as being the furnace of Lithuanian translation science. But the translation training manual "Translation Theory Primer" by Olimpija Armalytė and

Lionginas Pažūsis wasn't released until 1990. For university and college students who chose to major in translation studies, it became the primary textbook. As Leonavičienė (2018) notes, translation programmes taught its main principles in the foreign language departments at Vilnius Institute of Pedagogy and Vilnius University. According to the author, Vilnius University created the opportunity for philologists who studied Lithuanian and another foreign language to specialize in written translation during the last years of Soviet rule (for instance, the program offered by the university from 1982 to 1989, which was taught in Lithuanian–French Studies). In addition, graduates of language studies programs were qualified to pursue careers as professional translators.

To sum up, the Soviet period found Lithuanian translator's work shaped by the Soviet ideology. One of the key figures during this period was Dominykas Urbas, whose focus was study and revision of translations. Students of a faculty established by him were responsible for translation of foreign works. However, Lithuanian translation studies were limited by the Soviet propaganda and no mention of Lithuania's past or cultural identity were allowed in the academia. During the late year of the Soviet rule, a specialization in written translation was permitted at Vilnius university and its graduates were allowed to become professional translators.

Translation education after the restoration of independence (1990–2020)

The people's will and inherent rights were expressed when the Supreme Council of the Republic of Lithuania declared the reestablishment of Lithuania's independence on March 11, 1990. There were now more options available for translation education. Leonavičienė (2018) claims that a revitalized interest in Western Europe and other countries during the early years of Lithuania's independence led to a large number of foreign writers translating classic and modern fiction. On the subject of translating foreign literary works into Lithuanian and translating Lithuanian writers' works into a variety of foreign languages, several scholarly studies have been produced.

Navickienė (2017) states that the Kėdainiai Jonušas Radvila College, which is currently the Kėdainiai Jonušas Radvila Study Centre of Kaunas College, began providing translation training in 1994. For students at this educational institution, Armalyte's "Translation Theory Primer" remains the primary resource from which they compose their course and thesis papers as well as conduct a comparative analysis of the original and the translation from the perspective of meaning transfer and transformation. Regrettably, the administration of the institution and other evaluators believe that this material, which is referenced in the descriptions of the translation programmes, is too archaic.

The demand for highly skilled translators from English to Lithuanian and from Lithuanian to English has grown since Lithuania joined the EU in 2004. At that time, Lithuania began receiving English-language documents from EU institutions, and Lithuanian institutions began producing English-language documents for EU organizations. In addition, Lithuanians began visiting other European nations; university mobility initiatives, such as Erasmus exchange programmes, were made available to faculty and staff

as well as students. As a result, written and spoken texts needed translators. According to Šalčiūtė-Čivilienė (2011) after Lithuania's restoration of independence, translation education is marked by some positive changes as compared to the Soviet period. First, they have received wider attention from scholars in different fields, including computing for linguistics, cultural studies, sociology, etc. Second, they have been evolving by gradually branching out into specialist fields, for example, children's literature translations studies (CLTS) or machine translation (MT) studies.

Lithuanian translation education started at the close of the 20th century and developed from then on. 1997 saw the founding of the Department of Translation and Interpretation Studies. As Maskaliūnienė & Kaminskienė (2012) note, Vilnius University started offering master's degree programmes with the creation of the Department of Translation and Interpretation Studies (<https://www.flf.vu.lt/en>). The Department of Translation Studies, Faculty of Philology, Vilnius University, has been a member of the European Network of Master's Programmes in Translation (EMT) since 2009. As such, the department has experience implementing the tasks assigned to the network's programmes. According to the authors, the Department's translation programme received a second-place ranking in the European Master's in Translation (EMT) network of the top translation programmes in Europe in 2014. The European Commission's Directorate-General for Interpretation (SCIC) has formally certified the Department of Translation Studies as the only conference interpretation training institution in Lithuania that meets European Union standards for professionalism. This is excellent news for the Department's educators, good news for the learners (who receive a diploma supplement confirming that they have studied the European Master's in Translation), and good news for the translation community as a whole (<https://www.flf.vu.lt/en>).

Postgraduate and non-formal (post-graduate) study programmes in translation were developed. Subsequently, in response to growing market demand and interest in translation studies, undergraduate degree programmes in translation were launched in 2012. The Translation Department at Vilnius University offered a compulsory subject "Computer Technologies" in undergraduate and postgraduate studies. These studies were based on machine translation. It can be assumed that because of AI revolution, artificial intelligence will soon be integrated into this study program.

The second decade of 21st century was that of innovation for translation studies in Lithuania. In the year of 2013, Vilnius University Kaunas faculty (<https://www.knf.vu.lt/en/>) launched a new undergraduate and later postgraduate study programme "Audiovisual Translation". Translators who studied them were prepared with knowledge of Lithuanian and English, German as the second foreign language, and French or Russian as the third foreign language. In this programme, students translate films, TV series, video games and other audio-visual material, adapt audiovisual works for the blind and visually impaired, and the deaf or hard of hearing. In 2023, a new undergraduate programme, "Audiovisual Translation: Accessibility of Digital Content" appeared at Vilnius University Kaunas Faculty. Students of this programme learn how to translate from/to Lithuanian to/from foreign languages (English and German or French); to use different

audiovisual translation techniques (subtitling, surtitling, dubbing); to produce inclusive and accessible digital content for a variety of audiences (audio-description for the blind and visually impaired, subtitling for the deaf and hard of hearing, and other alternative ways of presenting information). Therefore, Vilnius University Kaunas Faculty provides study programmes focused on digital translation environments, encompassing not just machine translation but also audiovisual translation. They took an unprecedented step by purchasing eye-tracking equipment in order to use the oculography method. Without doubt, Vilnius university Kaunas faculty is one of the innovators of the translation education in Lithuania and its focus on new areas further prove this.

While audiovisual translation mainly focuses on the translation of audiovisual content, there is another programme in Lithuania that solely focuses on the technicalities of translation. Similarly, to Audiovisual Translation, in the second decade of the 21st century, Kaunas University of Technology (<https://en.ktu.edu/>) began offering an undergraduate curriculum called “Technical Text Translation”. This programme was renamed “Translation and Post-Editing of Technical Texts” in 2023. While studying it, students learn how to use computer translation, text parallelization, and term management computer applications. The university provides students with the opportunity to use specialised translation software such as SDL Trados Studio, MemoQ, OmegaT, Déjà Vu, Wordfast, Passolo, Catalyst, Language Studio, Multilizer, and Visual Localize. Yet, artificial intelligence programmes such as ChatGPT and Microsoft Bing with GPT-40 are still not integrated into translation study programmes. Seeing as AI is quite technical, it would serve well to implement it in this study programme, and the previously discussed audiovisual translation study programme of Vilnius university since some of its modules teach technical knowledge.

There are other study programmes in Lithuania that mainly focus on translation but are not named as such or are not widely known. One of them is “Applied English Linguistics” graduate study programme at Vytautas Magnus University. The students of it study text editing, translation theories, literary translation, automatized translation, legal translation, scientific and technical translation. This study programme is more conventional than those provided by Vilnius University and Kaunas University of Technology. Those looking to increase their skills in the translation of media or interpreting are better off not choosing this translation course at Vytautas Magnus university. There is also an undergraduate study programme called “Translation and Editing” at Mykolas Romeris university. It begins by teaching students English in its first semesters, but otherwise it is also quite traditional as it primarily deals with text translation and editing, literary translation. This programme has one subject on computer assisted translation while Vytautas Magnus University teaches automatized translation which is likely machine translation.

To sum up, the strength of Lithuanian translation education is proven by a variety of translation programmes being offered by Lithuanian universities right now. Such programmes first originated during the end of the 20th century after the restoration of Lithuania’s independence. Vilnius university created undergraduate and graduate translation programmes. In their curricula, they began teaching machine translation in 2012. After

Lithuania became the member of the EU in 2004, the demand for professional translators arose due to the need to translate documents. Vilnius university Kaunas faculty is an innovator of translation studies in Lithuanian, as it was the first one to provide study programmes in audiovisual translation, and translation study programmes that focuses on the accessibility of media. Kaunas faculty programmes especially focused on digital translation environments, especially CAT, machine translation, and accessibility tools. Besides Vilnius university, another major player is Kaunas University of Technology, which offers a study programme solely related with technical text translation, and its post-editing. The Western translation tradition definitely played a part in the establishment of translation study programmes in Lithuania, and today there is more choice for such programmes than ever in Lithuanian universities.

The emerging newest trends of translation education in Lithuania (since 2020)

This period of translation education is marked by new competences and the appearance of generative AI. Revision competence and other-revision competences are given a lot of attention by Kasperė and Horbačasienė (2020), who contend that these should be included in the translation curriculum of today. According to the authors, revision can be cultivated and applied as a stand-alone skill. Translation competency always includes self-revision. According to Kasperė and Horbačasienė (2020), there is still a lack of research-based information in the training of revision competence. Although official standards such as the ISO17100 standard and EMT guidelines encourage the training of this competency, the authors point out that there are still obstacles in the way of its actual integration into translation training courses. A university curriculum should be centred on the paradigm, with a strong emphasis on the learning-centred approach that produces competencies that students can acquire.

Now, post-editing competency development for translators is highly prioritized. As noted by Levanaitė (2021), post-editing chores will certainly account for a significant portion of translators' workloads as machine translation software advances. The speed at which translators pick up essential post-editing competencies and skills will determine how prepared they are to make the required changes. The author argues that post-editing competencies should be developed at three different learning levels: in higher education, in translation businesses, and through self-learning by translators. Numerous universities in Lithuania focus on proofreading the translated material. Vytautas Magnus university offers a dual postgraduate programme in Sociolinguistics and Multilingualism that includes translation editing. In addition, Vilnius university postgraduate programme in Translation includes the course "Editing of Translated Text". A postgraduate programme in translation studies is offered by Mykolas Romeris university. This programme "Translation studies" offers translation and editing subjects. Kaunas University of Technology already has a postgraduate study programme "Translation and Post-editing of Technical Texts" which includes subjects like "Artificial Intelligence Prompt Engineering for Humanities" in addition to text editing and post-editing subjects. Although,

most universities offer post-editing and translation courses, and some already offer AI as a stand-alone subject, it is worth considering how translators' status as professionals is changing and programmes are developed that are tailored to their needs based on the labour market's supply.

Overall, in Lithuania's translation education of today, a shift to artificial intelligence technology is noted. This requires new competences in the form of machine translation or generative AI translation text post-editing. Therefore, translation study programmes need to be changed further to ensure smooth transition into a new period of generative AI. Those competences can be developed in formal studies, at the translation job itself or the process of self-learning. Either way, the quality aspiring translators now need the most is adaptability.

Discussion and Conclusion

Lithuanian translation tradition is young but has rich history. The foundation of Lithuanian translation tradition lies with Martynas Mažvydas's Catechism published in 16th century. The translation as the science only began to emerge in the 20th century, and this is largely due to political, social, cultural, technological and other circumstances. The first period of such a development was the interwar period (1918–1940) during which big leaps in translation science were made in Lithuania. During this period foreign fiction was translated into Lithuanian, the translators were not formally educated in translation, and their differing vocations ranged from writers to priests. During the interwar period (1918–1940) translation education appeared as a “hidden curriculum”. As this study shows, the most well-known individuals were linguist Jonas Jablonskis and Sofija Čiurlionienė-Kymantaitė. In an effort to guarantee high-quality translations, Jonas Jablonskis prioritized accurate translation, Sofija Čiurlionienė-Kymantaitė arranged “Language Saturdays”, in which well-known Lithuanians read and translated works of literature. It is evident that official translation education was typically lacking at the time. Priests or other well-known individuals taught the translation trade to others. Those people were pioneers, at the time Lithuanian translation and its theory saw its initial development steps.

The second one was the Soviet occupation (1940–1990) which halted all the progress that was made in translation theory advancement and made all the translations during that period coloured by the Soviet propaganda. This direction was that of halting and oppression. The Russian language started to take primacy, but with the assistance of his students at the Translated Literature Department of the “VAGA Publishing House,” Dominykas Urbas, a master in Lithuanian artistic translation, translated literature from a number of languages. During the Soviet period Lithuania was limited by ideological principles of the Soviet Union (Leonavičienė, 2018), but in 1971, Vilnius University began offering a specialized course in creative translation. In addition, graduates of language studies schools could pursue careers as professional translators at the time. Translation education was repressed, but occasionally active, especially during the later Soviet years

when written translation specialization appeared at Vilnius university. The direction translation in Lithuania took was that of oppression and occasional unpredictability.

In the third period, there was the period that began after the restoration of independence in Lithuania in 1990. The directions inherent to this period meant the restoration of the Western translation tradition, and translations again being focused on Western developed material. Also, during these times Lithuania became a member of the NATO and the EU, and that prompted the demand for interpreters and professional translators who could translate English, and other language documents. It should be mentioned that during this period, the new period originated as machine translation and generative AI became a thing. But what is most important is that specialised translation study programmes were finally created by Lithuanian universities and continue being created and expanded upon up to this day. Therefore, Lithuanian translation tradition had ups and downs through its history, but at the end of it all, it returned to the Western tradition and is now stronger than ever. Since Lithuania regained its independence, things have changed, especially with its membership in NATO and the EU (Šalčiūtė-Čivilienė, 2011). The translation education was characterized by a lot of options and flexibility throughout this time. The postgraduate translation programme at Vilnius University, which is recognized by the European Network of Master's Programs in Translation (EMT), is one of the translation studies programmes that the universities began to offer. New programmes such as Audiovisual Translation (VU) and Translation and Post-editing of Technical Texts (KTU) were also offered by other universities. Translation programmes became much more varied than they were during the Soviet years as they began offering courses related to audiovisual translation and technical text translation. This period is that of resurgence and revolution of Lithuania's translation education. The direction translation education in Lithuania took at this period was redevelopment, innovation and embracing novelty.

The newest period consists of the changing times and the introduction of artificial intelligence (AI) into translation education, along with the emergence of new study programmes like post-editing. Due to this, translators need to broaden their horizons and acquire new skills. Universities are introducing new study programmes, integrating various courses, and providing students with the best chances as the field of translation studies evolves. In addition, students might acquire knowledge in formal, non-formal, and informal ways, such as by participation in engaging activities or language courses. It is essential that translators gain new knowledge in their job, free time and voluntary courses. When it comes to the new trends in translation, it is possible to argue that translators of the future will serve as translation technologists and post-editors. Like machine translation now operates, the technologist will handle the technical aspects of translation, with the post-editor handling quality assurance. Alternatively, the translators could also work as interpreters, administrators in hotels, guides in tourist firms, and teachers in general schools and language schools. Furthermore, to guarantee the quality of translation, translators must also possess the knowledge of specific field they are working in. AI is one area that both threatens to take the job of a translator and presents

new opportunities to adapt to the ever-changing job market. This shift to AI will have an impact on translation education now and in the future. The emerging new trends in translation mean new technological leaps, translators being more reliant on technology and pose some uncertainty about the future of translators, especially those who consider themselves to be traditional written text translators.

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THE IMPACT OF CHATGPT FOR HEALTHCARE EDUCATION AND TEACHERS' EDUCATION

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ABSTRACT

The field of education is transforming, with AI playing a key role and ChatGPT emerging as a significant manifestation of this change. ChatGPT is moving beyond its role as a facilitator and becoming an active participant in the educational process, leading to a shift from passive to active learning. ChatGPT offers new opportunities in various fields, including education and medicine. This study is a literature review presenting the implications of ChatGPT's utilization in healthcare education and teachers' education that follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to examine the role of ChatGPT in healthcare education and teachers' education. The search strategy focused on identifying published scientific literature from January 1, 2023, to March 5, 2024, about ChatGPT in healthcare education and also its role in teachers' education. Ultimately, 35 and 14 articles meeting the eligibility criteria for each field were included in the review for further analysis and synthesis of findings. The findings of this study reveal that in both sectors, ChatGPT promotes enhanced accessibility and personalization by providing tailored educational resources, supporting curriculum development, and facilitating information retrieval and idea generation. Additionally, it serves as a valuable tool for language and organizational support, fostering effective communication and literacy development among learners. However, common limitations exist, including ChatGPT's inability to provide direct explanations or real examples, the risk of misinformation and bias in generated content, and concerns regarding academic dishonesty and the limitations of evaluation. Furthermore, effective utilization of ChatGPT requires educators to be familiar with AI technologies, highlighting the need for ongoing professional development and training. In conclusion, the integration of ChatGPT in these domains underscores the convergence of innovative technologies in advancing educational practices. Continued exploration and utilization of ChatGPT hold promise for further enhancing educational outcomes and fostering continuous improvement in healthcare and teacher education practices.

Keywords: *ChatGPT, Education transformation, AI in education, Healthcare education, Teacher education, Personalized learning, Critical thinking, Curriculum development*

Introduction

Potasheva et al. (2019), Mhlanga (2023), Baidoo-Anu and Owusu Ansah (2023), Kalota (2024) argue that technological advances are changing and transforming education. Education and technology are interrelated and influence each other. Technology has enabled changes in education, and education has also influenced technological advances. Among modern technologies, artificial intelligence stands out as one of the most prevalent, successful, and widely used technologies in many sectors, including education and healthcare.

In the history of artificial intelligence, according to Alier, García-Peñalvo and Camba (2024), an important milestone was the launch of ChatGPT on November 30, 2022. ChatGPT is the latest achievement in artificial intelligence technology, which has gained significant importance in various fields, including education and healthcare. It is worth noting that ChatGPT was developed by OpenAI, an artificial intelligence company based in San Francisco, California. As noted by Zhang and Tur. (2022), ChatGPT has received a lot of attention and gained more than a million subscribers in the first week of 2022. On November 30, Mamykina et al. (2022) reported that ChatGPT's advanced capabilities made it a popular topic on social media and news portals, including Nature and The New York Times.

In 2023, many researchers around the world devoted their efforts to empirical studies of ChatGPT (Lingard, 2023; Pavlik, 2023; Bilal, 2023; Ali et al., 2023; Hosseini et al., 2023; Sakirin and Said, 2023; Zhang and Tur, 2023; et al.). Since ChatGPT is classified as a text generation tool, the following keywords are found in its conceptual discussion: text writing. This claim is supported by researchers such as Ortiz (2022), Lucy and Bamman (2021), Kanabar (2023), Tate, Warschauer and Gerjets (2023), who present ChatGPT as an artificial intelligence tool that generates text in their conceptual discourse on ChatGPT. For example, Ortiz (2022) emphasizes that ChatGPT is an artificial intelligence-based natural language processing system that closely mimics human communication with the end user. According to the author, ChatGPT allows users to answer questions and provide assistance, such as creating emails, writing essays, generating software code, and so on.

Lucy and Bamman (2021), Kanabar (2023), Tate et al. (2023) found that ChatGPT demonstrated exceptional abilities to perform complex tasks such as writing articles, stories, poems, essays, and summaries. The authors claim that ChatGPT can also edit texts from different perspectives and even generate and compile computer code. According to Von Garrel, and Mayer (2023), the new technology can process both textual and visual input data, including text documents, photos, diagrams, or screenshots.

Other researchers associate ChatGPT with large amounts of data and their processing. Fitria (2023) notes that OpenAI technology generates text by analyzing large amounts of training data and understanding the relationships between them. Rudolph, Tan and Tan (2023) note that ChatGPT is a pre-trained transformer that generates text that is indistinguishable from human-written text. Lingard (2023) adds that versions of ChatGPT

(e.g., 3.5 and 4.0) were pre-trained using large amounts of data up to 2021. According to the author, this allows the system to recognize language patterns and relationships that are later used to generate conversation text.

Studies in the scientific literature reveal another side of the conceptual discourse on ChatGPT, in which ChatGPT is described as an AI tool that can initiate a conversation with a user and answer their questions. These ideas are supported, for example, by Rudolph et al. (2023), who emphasize that ChatGPT can initiate conversations with users. This idea is complemented by Roose (2022), who points out that ChatGPT quickly gained a lot of attention due to its detailed answers and ability to formulate responses in various fields of knowledge. Kasneci et al. (2023), AlAfnan et al. (2023) note that ChatGPT can be used as a tool for generating answers to theoretical questions and developing initial essay ideas. Lingard (2023) adds that when a query is entered into ChatGPT, the input is analyzed and a response is generated based on knowledge acquired through online machine learning.

Although human intelligence remains unmatched in terms of adaptability and creativity, the synergy with artificial intelligence is nevertheless promising, especially in the field of healthcare, where artificial intelligence can improve personalized medicine and diagnostics, as stated by Johnson et al. (2021). Paranjape et al. (2019) add that AI chatbots, such as ChatGPT, could simplify healthcare education in the field of education, but evidence-based limitations and risks should be carefully considered. Opara, Mfon-Ette, and Aduke (2023) argue that the integration of ChatGPT into educational processes is not limited to healthcare education. According to the authors, it changes the roles of all participants, especially educators. Although AI ensures efficiency, personalization, and optimization of activities, Sun and Hoelscher (2023) argue that it is necessary to recognize the irreplaceable human qualities of teachers, including adaptability and flexibility.

It is clear that teachers remain the most important part of the education system today, as they provide subtle understanding, empathy, and mentorship that AI cannot replicate (Sun and Hoelscher, 2023). However, as Opara, Mfon-Ette, and Aduke (2023) point out, the synergy between AI and teachers is a promising way to improve educational outcomes. ChatGPT, as an artificial intelligence tool, can significantly improve teachers' skills (Sun and Hoelscher, 2023).

As Opara, Mfon-Ette, and Aduke (2023) point out, it can be a writing assistant, helping to rephrase text, develop concepts, and summarize information. Furthermore, according to Sun and Hoelscher (2023), ChatGPT can monitor student learning progress, identify gaps, and address individual needs from early childhood to various stages of learning. Sun and Hoelscher (2023) note that by integrating ChatGPT into their practice, teachers can leverage its potential to optimize teaching strategies, increase student engagement, and personalize the learning experience. According to the authors, this collaborative approach allows for the advantages of both AI and human resources to be leveraged, resulting in more effective learning outcomes.

Opara, Mfon-Ette, and Aduke (2023) point out that the role of ChatGPT in teacher training is not to replace traditional teaching methods, but to complement and enhance

them. By implementing this integration, as Sun and Hoelscher (2023) add, they can leverage the power of artificial intelligence to better serve their students and adapt to the changing educational environment.

After examining the concept of ChatGPT and the main advantages of this AI tool, the risks associated with its use cannot be ignored.

According to researchers such as Trust, Whalen and Mouza (2023), Baidoo-Anu and Owusu-Ansah (2023), Firaina and Sulisworo (2023), Cabrera, Perer and Hong (2023), Zhou Liu, Grassini (2023), Božić and Poola (2023), Kasneci et al. (2023), and other scientists and researchers, ChatGPT users face several dangers: the risk of misinformation and bias, and the risk of losing academic integrity. Deng and Lin (2022) add to these statements by emphasizing that the academic community has different reactions to ChatGPT, which reflects the ongoing discussions about the benefits and risks of advanced artificial intelligence. Although ChatGPT and similar large language models (LLMs) are known for their efficiency and accuracy, the authors argue that there are still concerns about bias in the training data, which leads to factual inaccuracies or “hallucinations”. Sallam et al. (2023) add that there are concerns about accuracy, ethics, and misinformation in healthcare and academic writing.

Other researchers delve deeper into the negative side of ChatGPT, arguing that its use raises questions related to “ethics, copyright, transparency and legal issues, bias, plagiarism, lack of originality, inaccurate content with the risk of hallucinations, limited knowledge, incorrect citations, cybersecurity issues, and the risk of infodemics” (Sallam 2023).

Rudolph et al. (2023) called ChatGPT a «bullshit spewer,” while Arif, Munaf and Ul-Haque (2023) argues that ChatGPT lacks critical thinking, requiring human intervention. Wach et al. (2023) also offer several critical comments on AI, particularly ChatGPT, listing urgent regulatory needs such as poor quality, misinformation, algorithmic bias, job losses, privacy violations, social manipulation, “erosion of ethics and integrity,” social and economic inequality, and AI-related “technostress” as causes for concern. Most importantly, according to Wach et al. (2023), ChatGPT does not understand the questions asked of it. Deepak (2023) notes that ChatGPT distorts the power relationship between AI and the user in fundamental and undesirable ways, reducing epistemic transparency and challenging the traditional search engine paradigm.

Research problem: Although the application of ChatGPT in healthcare and teacher training is rapidly spreading and gaining recognition and appreciation, there is a lack of systematic, up-to-date research data that clearly reveals the advantages and risks of ChatGPT and helps to establish practical limits and recommendations for the responsible integration of ChatGPT into healthcare studies and teacher training.

The aim of this article is to explore the potential of ChatGPT in the fields of healthcare and teacher training, while acknowledging the limitations of its use in both fields and the lack of common practice.

Methodology

Search Strategy regarding ChatGPT and Healthcare Education

The systematic review followed the PRISMA guidelines (Moher et al., 2009) and used data from reputable databases such as PubMed and Google Scholar. Eligibility criteria included published scientific literature related to ChatGPT in healthcare education, excluding non-English language publications, irrelevant records and non-academic sources.

The PubMed/MEDLINE search strategy from 1 January 2023 to 5 March 2024 used the keyword phrase “ChatGPT” AND “Healthcare education” and yielded 80 results. Google Scholar using Publish or Perish (version 8), “ChatGPT” and “Healthcare education” yielded 200 initial results, focusing on review articles from 2023 to 2024.

Article titles and abstracts were reviewed; duplicates ($n = 42$) and non-English language publications ($n = 40$) were excluded. Articles on ChatGPT outside the field of health education and non-academic sources were also excluded ($n = 80$ and $n = 20$, respectively). Full-text access was attempted for the remaining publications ($n = 100$); 42 articles could not be accessed in full text and were therefore excluded prior to full-text selection. Of the 58 full-text articles obtained, 23 were deemed irrelevant. Thus, 35 articles meeting the inclusion criteria were selected for the review.

Table 1 A summary of the main benefits, limitations, and conclusions of the included research articles regarding the use of Chat GPT in healthcare education

Author	Benefits	Limitations	Conclusions
Thorp (2023)	–	Content unoriginal, inaccurate, risky	ChatGPT use: academic misconduct.
Kumar (2023)	Enhancing precision, clarity, originality	Lacks adherence, citations, accuracy	ChatGPT boosts academic writing
Wang et al. (2024)	Versatility	Hallucination, fraud, plagiarism	Guidelines vital for ChatGPT integration.
Nisar and Aslam (2023)	High level of precision (context-wise)	Insufficient content for research purposes	ChatGPT: self-learning potential.
Lund and Wang (2023)	ChatGPT helps review, analyze, translate.	Ethics, privacy, bias, transparency concerns.	Academic advancement,
Manohar and Prasad (2023)	ChatGPT: clear, understandable text.	Lacks precision, reliable citations.	Risk of misleading health care practices.
Akhter and Cooper (2023)	ChatGPT: relevant introductory summary.	Outdated knowledge, citation errors.	ChatGPT can't replace independent reviews.
Mann (2023)	Writing proficiency, dataset analysis.	Diminished data quality.	Integration in scientific, medical journals.
Huh (2023)	Performance to improve.	ChatGPT performed worse than students.	improvement expected,
Khan et al., (2023)	Personalized learning.	Knowledge cutoff 2021.	Aids in medical fields, Human skills crucial.

Author	Benefits	Limitations	Conclusions
Gilson et al., (2023)	Grasps context, aids group learning.	Restricted knowledge up to 2021	USMLE performance, virtual tutor.
Marchandot et al., (2023)	ChatGPT assists in literature reviews,	iInaccuracies, bias, ethics, plagiarism risks.	ChatGPT credited for contributions.
Benoit (2023)	Fast, flexible, plagiarism-free text.	Inaccurate references.	Medical education, patient communication.
Antaki et al., (2023)	Ophthalmology resident level.	Image processing incapacity, bias risk	Potential in ophthalmology
Hisan and Amri (2023)	Creates educational material	Ethics, fraud, cheating impact.	Practical skill assessment.
O'Connor (2023)	ChatGPT: personalized learning potential.	Plagiarism, bias.	Improve nursing assessments.
Fijačko et al., (2023)	ChatGPT: occasional accuracy.	Referencing issues, overly detailed responses.	Self-learning tool for life support exams.
Kung et al., (2023)	Aids patient communication,	–	Unbiased studies needed.
Mbakwe et al., (2023)	–	Bias risk, lacks reasoning.	Medical education reassessment
Ahn (2023)	Understandable interaction.	Personalized, clear interaction.	Explore ChatGPT's role in CPR education.
Cotton et al., (2024)	–	Plagiarism, integrity concerns.	Reflect on assessment tools thoughtfully.
Aljanabi et al., (2023)	Aids writing, code generation.	Inaccuracy, math handling issues.	ChatGPT gaining scientific interest.
van Dis et al., (2023)	Accelerates innovation, training optimization.	Compromised research	Establish rules for accountability
De Angelis et al., (2023)	ChatGPT speeds up academic research.	Misinformation, fake research.	Balance benefits, risks; set ethical guidelines
Chen (2023)	Breaks language barriers	Ethics, accuracy, citation problems.	Authors need AI proficiency.
Moons and Van Bulck (2023)	Streamlines data collection.	Accuracy concerns, knowledge limit to 2021	Promises value in healthcare.
Cahan and Treutlein (2023)	Saves time	Shallow insights, lack of references.	ChatGPT sped up editorial writing
D'Amico et al., (2023)	Offers patients timely, accurate treatment info	Inaccuracies, privacy, ethics, legal concerns	Neurosurgery leads to AI integration in care.
Shen et al., (2023)	Generates reports, summarizes records.	Hallucination risk, inaccurate results	Use ChatGPT cautiously
Zielinski et al., (2023)	Valuable for researchers.	Incorrect answers, pre-2021 knowledge	Transparent handle of ChatGPT
Polonsky and Rotman (2023)	Enhances accuracy, precision.	IP concerns with financial gains.	AI may be credited as an author.
Wang et al., (2023)	More precise than current query methods.	Inadequate for high-recall retrieval.	A promising research tool

Author	Benefits	Limitations	Conclusions
San-marchi et al., (2024)	ChatGPT offers suitable responses.	Bias risk, expertise devaluation, fraud.	ChatGPT adds value, human ingenuity remains vital.
Duong and Solomon (2023)	Democratizes genetic information access.	Reproducibility concerns.	Value expands in research
Gordijn and Have (2023)	–	Inaccuracies, copyright issues.	LLMs could write publishable papers.

Search strategy for ChatGPT and teacher education

In accordance with the PRISMA guidelines (Moher et al., 2009), the Emerald Management and Google Scholar databases were selected for the systematic review of scientific literature. One of the reasons for choosing Emerald Management was that it helped to ensure the selection of high-quality peer-reviewed journals. Meanwhile, Google Scholar allowed for broader coverage of interdisciplinary sources and faster detection of open access full-text publications.

It is also important to note that the articles had to be written in English and published between January 1, 2023, and March 5, 2024. A total of 154 records were identified: 15 scientific articles were selected for the selection process. The selection was carried out in two stages: (1) Two researchers independently reviewed the titles and abstracts of the scientific articles, removing duplicates and obviously irrelevant entries. (2) Selection was based on an evaluation of the entire text of the scientific article according to pre-agreed criteria (e.g., a clear analysis of the role of ChatGPT in teacher training, empirical or conceptual analysis, etc.). Only scientific publications that met all of the listed criteria (preprints, scientific articles) were retained. The suitability of a scientific article for this publication was decided by consensus between the two researchers, and an additional team member was involved when necessary. Fifteen scientific publications remained in the final review. It is also important to note that in 2024, when this publication was being prepared, 15 scientific publications met the selection criteria, but in the summer of 2025, one of them was retracted, so this publication presents 14 open access scientific publications.

Table 2 The main strengths, limitations and findings of the included research articles concerning ChatGPT support for teachers in education

Author	Benefits	Limitations	Conclusions
van den Berg and du Plessis (2023)	Offers accessible lesson plans.	–	Approach models cautiously, evaluate limitations.
Zhai (2023)	ChatGPT enhances instructional practices.	Teachers need expertise.	Teachers should watch for bias
Hong (2023)	ChatGPT improves language education.	Ethics, professionalism concerns.	Teachers urged to adapt to tech.

Author	Benefits	Limitations	Conclusions
Montenegro-Rueda et al., (2023)	Fast, personalized, feedback, complex concepts	ChatGPT doesn't replace learning processes	ChatGPT enhances education, needs teacher familiarity.
Ausat et al., (2023)	Teachers use ChatGPT for materials, questions, tests.	Generates text, lacks detailed explanations, assessments.	Integration and teacher training essential.
Trust, Whalen and Mouza (2023)	ChatGPT supports teacher tasks.	Misinformation, bias, cheating.	Education on ethical tool use.
Grassini (2023)	ChatGPT automates evaluation	ChatGPT promotes academic dishonesty	Teacher development vital for AI utilization.
Baidoo-Anu and Owusu-Ansah (2023)	Teachers utilize ChatGPT for learning.	ChatGPT limitations: errors, biases, privacy.	Leverage ChatGPT for teaching.
Firat (2023)	Suggests personalized learning materials.	-	Fosters dynamic learning.
Firaina and Sulisworo (2023)	Assists with translation, and questions.	-	Verify information with reliable sources.
Božić and Poola (2023)	Creates personalized student experiences.	ChatGPT may foster academic dishonesty.	ChatGPT: support, not replace, teaching.
Lo (2023)	Provides personalized student experiences.	Analyze, validate with reputable sources.	ChatGPT optimizes teaching, learning.
Wang et al., (2023)	AI streamlines education for better outcomes.	Address privacy, culture, language, ethics.	AI personalizes learning, aids assessment, identifies at-risk students. Chatbots complement human educators.
Marengo et al., (2024)	Personalized learning, predictive analytics, efficient automation, theoretical foundation, practical insights.	Potential bias, data privacy, tech dependency, ethics, impact on teaching.	AI enhances teaching, learning, needs research, China, USA lead research, implications: policy, pedagogy, ethics.

Results

Benefits and Concerns Regarding ChatGPT Use in Health Care Education

Thorp (2023) believes that the ChatGPT has transformative potential in healthcare education, and due to its successful use in examinations such as the the United States Medical Licensing Examination (USMLE) and concerns about potential abuse leading to academic dishonesty, there is a need to re-evaluate the assessment tools, as noted by Cotton, Cotton and Shipway (2023).

In the ophthalmology exam, Antaki et al. (2023) found that ChatGPT achieves the level of the average first-year resident, highlighting the importance of critical thinking questions. In addition, van Dis et al., (2023) found that ChatGPT supports personalised learning and direct feedback in healthcare training. These ideas are echoed by Benoit (2023), who notes that recent research also shows that it can effectively create realistic clinical vignettes.

Kumar (2023), Benoit (2023) point out that although ChatGPT improves communication skills in healthcare teaching under the guidance of an academic mentor, there are concerns about copyright issues and inaccuracies in the referencing of generated clinical vignettes. Furthermore, as Khan et al. (2023) note, its accessibility motivates personal interaction, encourages independent learning and complements group learning efforts.

Fijačko, Gosak and Štiglic, et al. (2023) consider that limitations in healthcare training include concerns about the quality of the training dataset, which may lead to biased or erroneous information, especially when using older data. In addition, Huh (2023) argues that concerns include limited image processing capabilities, poor performance on certain topics (e.g., failure of Korean medical students in a parasitology exam) and the risk of plagiarism.

Advantages and Limitations of ChatGPT in teacher education

The majority of articles in Table 2 discuss both the advantages and limitations of integrating ChatGPT in educational settings. *These articles highlight key aspects of ChatGPT's support for teachers in the educational process.*

1. **Immediate Feedback and Assessment.** Van den Berg and du Plessis (2023) stress ChatGPT's immediate feedback, reducing teacher workload and enhancing teaching quality. Likewise, Zhai (2023) found ChatGPT effective in handling complex science assessment tasks, aiding teachers in task design with comprehensive information.
2. **Personalized learning experiences.** Hong (2023) highlights ChatGPT's rapid feedback, which differs from the delayed feedback provided by teachers, preventing students from forgetting previous writings. Zhai (2023) highlights ChatGPT's applicability to both formative and summative assessment. Wang et al. (2023) emphasize its ability to accurately identify learning difficulties and monitor progress so that targeted measures can be taken. Meanwhile, Božić and Poola (2023) recommend using it for automatic essay assessment, as it saves time and provides quick feedback.
3. **Helps to create questions.** Marengo et al., (2024) state that ChatGPT can analyze students' writing, provide tailored feedback, and suggest learning materials, saving teachers time. Ausat and Massang et al., (2023) mention ChatGPT's use for generating questions and tasks automatically.
4. **Resource Recommendations.** Van den Berg and du Plessis (2023) highlight ChatGPT's advantage of providing teachers equal access to educational resources. Božić and Poola (2023) adds that ChatGPT can recommend tailored learning materials like articles, videos, and textbooks.

5. **Curriculum development.** ChatGPT is transforming education by helping teachers plan lessons and create resources. Firat (2023) and van den Berg and du Plessis (2023) highlight its ability to create structured teaching materials, increasing fairness and accessibility. Trust, Whalen, and Mouza (2023) note its usefulness in a variety of teaching tasks, while Kasneci et al. (2023) suggest using it for individualized practical tasks. Meanwhile, Grassini (2023) highlights its potential to reduce teachers' workloads.
6. **Information Retrieval and Idea Generation.** Trust, Whalen and Mouza (2023) has demonstrated in a study that ChatGPT, as one of the most advanced AI writing tools, can fulfill almost any teacher's writing requests.
7. **Language and Organizational Support.** At the semantic level, as Kasneci et al (2023) elaborate, ChatGPT can be used to highlight possible grammatical inconsistencies and to suggest adequate and personalised strategies for improvement.
8. **Facilitating Conversations.** Firaina and Sulisworo (2023) confirm ChatGPT's ability to generate discussion topics and creative writing prompts for students. Grassini (2023) extends this by proposing its use in group discussions and debates, offering personalized guidance to learners. Lo (2023) notes ChatGPT's generation of conversations on common student topics like college life.
9. **Help with text translation.** Grassini (2023) highlights ChatGPT's ability to quickly translate learning material into multiple languages, enhancing accessibility and creating a responsive learning environment. Additionally, ChatGPT supports learners with disabilities by offering services like speech-to-text and text-to-speech.
10. **Quality Reading Materials.** Hong (2023) highlights ChatGPT's integration of teaching materials for efficient lesson preparation. Wang et al. (2023) emphasize its personalized tools for language learning, while Lo (2023) underscores its role in curriculum curation and innovation. Baidoo-Anu and Owusu-Ansah (2024) note its guidance in personalized learning, and Ausat et al., (2023) mention its natural language processing for understandable texts.

Upon review, several potential limitations of ChatGPT have emerged.

1. **Limited number of explanations and examples.** Montenegro-Rueda et al. (2023) highlight that ChatGPT cannot provide direct explanations or real examples to elucidate concepts, unlike teachers. Ausat, Massang et al., (2023) also note this limitation, emphasizing that ChatGPT cannot offer explanations or examples like human educators. Additionally, Lo (2023) agrees that ChatGPT-generated content may not consistently align with teachers' intended educational objectives.
2. **Risk of misinformation and bias.** Concerns about misinformation and bias in ChatGPT responses emphasize the need for critical evaluation of its content. Trust, Whalen, Mouza (2023) and Baidoo-Anu and Owusu-Ansah (2023) highlight instances of misinformation and bias in ChatGPT-generated content, underlining potential privacy issues. Firaina and Sulisworo (2023) stress the importance of cross-verifying information from reliable sources.

3. **Promotion of academic dishonesty.** ChatGPT's access to generated content raises ethical issues related to academic integrity. Hong (2023) highlights issues of accuracy, data contamination, and the risk of plagiarism. Trust, Whalen, Mouza (2023), Grassini (2023), Božić, and Poola (2023) express concern about the opportunities for cheating and plagiarism created by ChatGPT.
4. **Limitations of the evaluation.** While ChatGPT is excellent at generating text, its inability to provide nuanced assessments of students' abilities beyond the existing data may limit its usefulness in assessing complex skills or understanding.
5. **Lack of familiarity with the AI technologies.** Hong (2023) stresses the importance of teachers being proficient in using AI like ChatGPT. Zhai (2023) emphasizes the need for teachers to possess professional knowledge to effectively utilize ChatGPT in teaching.

These limitations highlight the need for careful use of ChatGPT, understanding its strengths and weaknesses, and combining it with human oversight to address potential drawbacks.

Common Aspects

This chapter examines commonalities in ChatGPT's use in healthcare and teacher education, exploring their shared implications.

1. **Enhanced Accessibility and Personalization.** In both healthcare and teacher education, ChatGPT improves access to resources and personalizes learning. By tailoring content to individual needs, it promotes inclusive education. Educators use ChatGPT to provide targeted support, addressing learners' specific objectives and challenges.
2. **Support for Curriculum Development and Lesson Planning.** ChatGPT aids in curriculum development and lesson planning for both healthcare and teacher education. Educators use it to create learning materials, develop curriculum frameworks, and innovate teaching methods. Its ability to generate content aligned with educational goals streamlines curriculum customization to meet learners' needs.
3. **Facilitation of Information Retrieval and Idea Generation.** Both healthcare professionals and teachers leverage ChatGPT for information retrieval and idea generation. In healthcare education, ChatGPT assists in accessing healthcare literature, synthesizing research, and formulating practice guidelines. Likewise, teachers use it to access educational resources, create instructional materials, and brainstorm teaching strategies, fostering pedagogical innovation.
4. **Language and Organizational Support.** ChatGPT provides language and organizational support in healthcare and teacher education. In healthcare, it aids in drafting clinical documents, creating patient education materials, and improving communication skills among professionals. Similarly, teachers use ChatGPT to analyze student writing, offer language feedback, and enhance organizational coherence in academic texts, fostering effective communication and literacy development.
5. **Promotion of Critical Thinking and Inquiry Skills.** In both healthcare and teacher education, ChatGPT nurtures critical thinking and inquiry skills. Healthcare students

use it to dissect case studies, delve into differential diagnoses, and partake in clinical reasoning, honing problem-solving and diagnostic proficiency. Likewise, teachers prompt students to assess ChatGPT-generated content critically, distinguishing trustworthy information and fostering evidence-based reasoning, thus enhancing their analytical thinking and research literacy.

Limitations

The current review findings should be interpreted cautiously due to several factors. Variations in study quality across analyzed articles may restrict the generalizability of findings. Moreover, focusing exclusively on English articles may introduce language bias, potentially overlooking pertinent research in other languages. Excluding inaccessible studies due to data limitations might result in missing relevant information, albeit to a minimal extent. Furthermore, given the rapidly evolving nature of the field and continuous growth in research on ChatGPT applications and risks, ongoing reviews and updated analyses are imperative for comprehensive understanding and assessment.

Future perspectives

van Dis et al. (2023) argue that there is an urgent need to develop guidelines for the ethical use of ChatGPT in research, which prioritise accountability, integrity, transparency and fairness. Lund and Ting (2023) add to these ideas by noting that further research is needed to assess the content of Big Language Patterns and the potential impact on academic and scientific progress, particularly in healthcare settings.

Shen et al., (2023) highlight that the feasibility and appropriateness of employing AI editors and AI reviewers in writing should be carefully examined in the light of past shortcomings in editorial and peer review processes. Similarly, O'Connor (2023), is of the opinion that the balance between emotional support provided by healthcare providers and the potential effectiveness of AI-based systems needs to be explored in healthcare settings.

Ahn (2023) argues that further research is needed in healthcare education to assess the impact of ChatGPT on the quality of educational content, the effectiveness of assessment tools and the improvement of students' communication skills. In addition, Fijačko et al., (2023) argue that attention needs to be paid to exploring the potential of LLMs to improve personalised learning outcomes through the use of instant feedback.

Conclusions

The integration of ChatGPT in healthcare education and teacher education highlights the convergence of innovative technologies in advancing learning and professional development. By enhancing accessibility, supporting curriculum development, facilitating information retrieval, providing language assistance, and promoting critical thinking, ChatGPT serves as a transformative tool in both domains. Moving forward, continued

exploration and utilization of ChatGPT hold promise for further enhancing educational outcomes and fostering continuous improvement in healthcare and teacher education practices.

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THE INTERPLAY BETWEEN DEEP FRIENDSHIP AND MORAL DEVELOPMENT: A CONCEPTUAL STUDY

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ABSTRACT

Friendships have a big influence on health and happiness. True friendship is also crucial for living a moral life. However, the conceptual relationships between friendship and moral growth are controversial and understudied. The objective of the research presented in this paper is to advance moral education theory by discussing the core characteristics of friendship and its relationship with moral growth. The research questions addressed in this study are: How is friendship conceptualized in the works of key Western philosophers? How is the interplay between moral growth and deep friendship theorized in recent scientific literature?

Methodologically, the research design is based on content analysis of friendship theory in academic literature. To address the first research question, the works of three key Western philosophers were analysed, namely, Aristotle, C.S. Lewis and A. MacIntyre. The interplay between friendship and moral growth was explored in the works of K. Kristjánsson, L. Polo and A. Rajský. The results indicate that friendship fosters happiness, virtue, and knowledge of truth. It involves intimacy, shared interests, and moral growth. True friendship is rare, selfless, and a gift requiring openness, honesty, and mutual care beyond mere companionship or utility. The discussion about the interplay between friendship and the moral life revealed that, while the ‘friendship for virtue’ approach sees friendship as aiding moral growth, the ‘virtue for friendship’ approach prioritizes friendship as the ultimate moral goal, with virtues sustaining it. This research is coherent with the national priorities of Latvia and with the priorities of the education sector and is a theoretical contribution for generating practical knowledge in the future, investigating empirically the relationship between friendship and moral growth and designing educational programs for promoting virtue-based friendships at school. Suggestions for further research were also put forward.

Keywords: *Friendship, happiness, moral growth, moral philosophy, virtue for friendship*

Introduction

Friendships have been qualified as “our most powerful relationships” (Dunbar, 2021). The state of the art on scientific research regarding the benefits of friendship can be

summed saying that the number and quality of our friendships may have a bigger influence on our health, happiness, and mortality risk than anything else in life (Waldinger & Schulz, 2023; Cuddeback, 2021; Dunbar, 2021). True friendship is also crucial for living a moral life (Kristjánsson, 2022; MacIntyre, 2019; Rajský, 2023), which, in its turn, is necessary for a meaningful life. Eudaimonia was recently set as the first research priority for the next 10 years, if we are to complete “the well-being revolution” (Helliwell et al., 2023 in UN “World Happiness Report”). However, the conceptual relationships between friendship and moral growth are controversial and understudied. The goal of this conceptual research is to contribute to moral theory development by exploring the interplay between moral growth and friendship.

Several gaps in scientific research and education motivated this study. Most recent research on adolescents’ friendship has addressed the associations between sympathy and mutual disclosure in friendship (Bechtiger et al., 2021), interpersonal behaviour and friendship quality (Dryburgh et al., 2022), the feelings of school belonging and high school students’ friendship profiles (Fan & Bellmore, 2023), the academic benefits of maintaining friendships across the transition to high school (Lessard & Juvonen, 2022), as well as the transformations of friendships from early adolescence to adulthood (Buler & Pustulka, 2021) and irrational beliefs in friendship relationships in adolescents (Yılmaz & Özgüngör, 2023). However, the impact of friendship on moral development is understudied.

Moral education at school has become more urgent (e.g., ICFE 2021; OECD 2021): there is an increasing concern among scholars and educators about teenagers’ peer violence (e.g., Skrzypiec et al., 2019), sleep deprivation and mental health problems (Kansagra, 2020), fear of taking responsibility (Faranda, 2020), and individualism and superficiality (Carr, 2020), among other issues, which are partly due to a lack of support given from adults to youngsters for developing moral character and virtues. Scholars advocate for a shift in youth thinking from survivalist attitudes and hedonism to engaging in society with noble ideals and virtues. Friendship plays a pivotal role in this transformation by linking socio-emotional skills with civic engagement. Developing friendships can enhance both personal relationships and societal involvement. The bond of friendship has the potentiality of strengthening social bonds, because it is a feature of friendship to care about those for whom the other cares.

Despite its importance, the educational focus on friendship has been minimal, primarily left to practitioners until recent attention was given to it in academic research (e.g., Kristjánsson, 2022). Given its importance, it is necessary to deeply understand this specific kind of relationship we call friendship, distinguishing it from other close constructs, such as ‘friendly relationships’, ‘romantic relationships’, or ‘family relationships’. Topical academic debates regarding the core of moral life also discuss the interplay between friendship and moral development: Is friendship a tool for developing virtue or are virtues at the service of friendship?

The objective of the research presented in this paper is to advance moral education theory by discussing the core characteristics of friendship and its relationship with moral growth. The research questions addressed in this study are:

RQ1: How is friendship conceptualized in the works of key Western philosophers who analysed the concept of friendship?

RQ2: How is the interplay between moral growth and deep friendship theorized in recent scientific literature?

Methodology

The research design is based on content analysis of friendship theory in academic literature. To address the first research question about friendship conceptualisation in the works of key Western philosophers, a careful consideration was given to several works of prominent contemporary academics who have explored the relationship of deep friendship to human happiness. It included, for instance, Dunbar's (2021) conception of friendships as one of the most powerful human resources, Cuddeback's (2021) argument that true friendship transforms virtues into happiness, Rosa's (2019) concept of 'resonance', which suggests that deep friendship can be seen as a mutual resonance with another person, from which human happiness arises, and Stern's (2014, 2023; Wałejko & Stern, 2023) insights on the negative correlation between loneliness and human happiness. Given the high number of authors dealing with this issue from different perspectives, three key Western philosophers were retained for the purpose of this article, namely, Aristotle, C.S. Lewis and A. MacIntyre.

To answer the second research question, i.e., the discussion of the interplay between friendship and moral growth, key authors representing contrasting views were explored. Kristjánsson's (2022) book "friendship for virtue" was chosen as representing the position that stresses virtue, and the contrasting position ("virtue for friendship") was explored mainly in the works of the Spanish philosopher L. Polo (1999, 2014) and his school (Sellés, 2020; Pérez Guerrero, 2022), as well as in the works of the Slovak moral philosopher A. Rajský (Rajský, 2023; Rajský & Wiesenganger, 2024).

Results

RQ1: Friendship conceptualisation in the works of three key Western philosophers

This section presents the most relevant insights of three key Western theoreticians of friendship: Aristotle, Lewis and MacIntyre. *Aristotle* considers that friends are necessary for happiness. As he wrote in the *Nicomachean ethics* (Aristotle, ca. 350 B.C.E./1925): "We consider a friend to be one of the greatest of all good things, and friendlessness and solitude a very terrible thing, because the whole of life and voluntary interactions are with loved ones". Friends are necessary for happiness, "for no one would choose to live without friends but in possession of everything else that is good". Aristotle distinguishes

imperfect friendships of “shared pleasure” and “mutual utility”, primarily related to hedonic well-being, from the perfect “character friendship” related to eudaemonia. For him, ultimately, only the phronimous (morally perfect) person can really be a good friend. Friendship requires “to know someone thoroughly and become intimate with him or her, which is a very difficult thing to do”. It involves honesty, acceptance, and selflessness. Sharing also is central to friendship, as “friends’ goods are common property” (Aristotle, ca. 350 B.C.E./1925, 217, 1). Friendship “in its essence seems to consist more in giving than in receiving affection ... In a friendship based on virtue, each party is eager to benefit the other ... and as they vie with each other in giving and not in getting benefit, no complaints nor quarrels can arise”.

Lewis, in his essay “The four loves” (1960), distinguished between “Affection love” (in Greek – storge, familiar love), “Friendship love” (philia), “Eros love” (being in love, which is distinct from ‘Venus love’ or sexual attraction, but can also include it) and “Charity” (agape, divine love). Lewis argued that the ancients saw friendship as “the happiest and most fully human of all loves” (p. 87), more elevated and “rational” than Eros and Affection; but since the romanticism (when sentiment, emotion and instinct started to prevail), friendship is often regarded as marginal. According to Lewis, one reason friendship is not valued in modern society is that few people experience it, because in some sense friendship is the “least natural” (p. 88) of loves: it’s not instinctive or necessary, and a person can go through life without it. In addition, true friendship has no “survival value” (p. 90), as companionship has, and friendship’s “exclusivity” may represent a danger for social authority, a “pocket of potential resistance” (p. 115). True friends are harder to correct (by good authorities) or to corrupt (by bad authorities). All this made friendship less popular in individualistic and totalitarian societies.

For Lewis, while it is possible to experience both Eros and Friendship for the same person, there are some strong distinctions between these two kinds of love: lovers are always talking about their love, while friends seldom discuss their friendship; lovers are absorbed in each other, while friends are normally absorbed in a shared interest; and though Eros occurs between two people, two is not the best number for friendship, because no single friend can throw light on every single facet of another, which is why having more than one friend is beneficial. This is also why friendship is “the least jealous of loves” (p. 92): friendship is not lessened, but only strengthened, when a new friend joins two friends.

Discussing the formation of new friendships, Lewis argued that companionship is the “matrix of friendship” (p. 94). It starts with shared activities such as religion, studies, hobbies, or work. Often friendship arises from a question, a discovering or an interest that companions agree to be important: Friendship cannot be sought for its own sake—it has to be about something. Mutual help is natural, but it is not the core of friendship (because it can be even a distraction from the common interest). And, unlike Eros, friendship is “uninquisitive”: ordinary facts about a person are less interesting than the question “Do you see the same truth?” (p. 97). Mutual knowledge and Appreciative Love of the other develops over time little by little, causing trust, respect, and admiration for a friend to

deepen. Friendship is also “arbitrary”, i.e., it is a gift: Nobody has a duty to be anyone else’s friend.

Morally speaking Friendship love is somehow ambivalent: can be a school of virtue or a school of vice, it can both benefit and endanger a community (p. 115). In fact, Lewis argue that friendship as a form of love has some particular weaknesses: there is a danger of moral and intellectual closure to the views and needs of those outside their group; and there is the danger of pride, which can make it difficult to see the weaknesses of the group of friends, and can give rise to an ill-founded sense of superiority. If this danger is not combated, the ‘common interest’ supporting friendship can even be centred on nothing more than excluding others, and then friendship disappears.

MacIntyre (2019) dismissed the views of Aristotle on “friendship only for the good” for being too idealistic and proposed a new paradigm of friendship. He characterized a friend as “someone who cares enough to listen attentively and patiently to what we say, someone who knows us well enough to ask the right questions, someone sympathetic enough to be able to understand how things look from our point of view, someone objective enough to recognize the limitations of our point of view, what is it about ourselves or others that we are failing to recognize or understand listen for someone able to tell us the truth” (MacIntyre, 2019, 44:31–45:02).

For MacIntyre, what is distinctive of friendship is truthfulness and care. He argues that “friendly relationships”, however important, are not “true friendships”, because they are not stable over time and there is no personal commitment to mutual care. For arguing this, MacIntyre’s anthropological start is that humans are “dependent rational animals” (MacIntyre, 1999) who share both a capacity for distinguishing the true from the false and a need to judge truly. Therefore, we need truthful others to make rational choices. A true friend is concerned not just that the other be rescued from error and delusion in general terms, but more particularly that the other learn to recognize those errors and delusions to which she or he is peculiarly liable to fall victim (MacIntyre, 2019, 55:34–55:50). Therefore, while virtues are necessary for friendship, friendship itself is a school of virtue.

MacIntyre proposes a new framework for friendship: Friendship as a gift (MacIntyre, 2019, 1:16:54–1:17:23). The rationale for this proposal is that there is always more to good friendships than what each of the friends brings to their relationship: friendships are beyond deserve, they are a gift. He draws two implications of this new framework:

- 1) the necessity of openness: as friendships can come suddenly, the person should be able to distinguish “friendly relationships” from “true friendship”, and to be “responsive” when friendship appears. The main obstacles for openness are pride (which can be manifest for instance in a lack of gratitude or a desire of independence), greed (a lack of temperance which instrumentalises and strangles true friendship) and insincerity (acting, like playing a role, and even believing the role one plays sometimes unconsciously).
- 2) a new way of looking at virtue growth and friendship: friendship is not primarily the result of moral goodness, as Aristotle said (Kivle, 2018), but a school of virtue.

Friendship helps virtue growth in two ways: friends help to improve self-knowledge with their truthfulness; and maintaining friendship is a strong motive to moral development because, when pursuing the goods of true friendship (sharing, enjoying, connecting deeply, collaborating), we realize that we can reach them only through virtues: acting more justly, more generously, more temperately and more courageously.

RQ2: The interplay between friendship and the moral life: “friendship for virtue” versus “virtue for friendship”

This section summarized the state of the art in the recent debate about the question whether friendship is a tool for virtue growth, or virtue is a tool for cultivating deep friendships. While both approaches are complementary, different positions are held about the question of what should be the priority in moral development: virtue or friendship?

On the one hand, the “friendship for virtue” approach sees friendships as a tool for moral growth and flourishing, which is posited as the goal of moral life. In this view, friendship is an important but collateral positive outcome of the virtuous life, which is at the centre. The tenets of this view acknowledge that moral virtues are a requisite for having friends, but their approach is closer of MacIntyre’s “friendship as a school for virtue”. The most relevant contemporary tenant of this view is the Neo-Aristotelian moral philosopher K. Kristjánsson, who, in his recent book “Friendship for virtue” (2022), acknowledges that the current virtue ethics literature gives less importance to friendship than Aristotle did and pretends to give the virtue of friendship the pride of place it deserves in contemporary Aristotle-inspired virtue ethics. He also highlights Aristotelian friendship as a moral educational concept, where ‘friendship for virtue’ is to be understood as ‘friendship for virtue development’. Friendship is important because it is both a virtue and a tool for virtue growth. Critics of this view have recently pointed to the necessity of moving beyond the cultivation of Aristotelian virtuous character (Carr, 2023a, 2023b) in moral development theory.

On the other hand, the “virtue for friendship” approach sees virtues as a tool for friendship, a “strategy of love” (Wadell, 2009). Two relevant tenants of this view are the Spanish philosopher L. Polo (1999, 2004) and his school (Sellés, 2020; Pérez Guerrero, 2022), and more recently, the Slovak moral philosopher A. Rajský. While Polo acknowledges that it is not possible to be true friends with someone who lacks the necessary loyalty, for him virtues are at the service of friendship. Friendship is the most advanced, mature state of virtue (Sellés, 2020) and it is the goal of moral education, whose culmination is to be the best friend possible (Pérez Guerrero, 2022). Friendship presupposes all the other virtues (prudence, sincerity, openness, frankness, service, etc.), which are resources that serve friendship. Friendship as a special kind of virtue has two particularities: 1) while the other virtues are moral habits the person possesses, friendship is not about possessing: in friendship, the person gives herself to another; and 2) friendship is a reciprocal virtue, a form of mutual love: in true friendship, both friends are active. This is what makes friendship different from philanthropy or compassion, which do not

have necessarily this reciprocal character. Rajský, in his most recent works (Rajský, 2023; Rajský & Wiesenganger, 2024) also considers friendship (Greek: “philia”) to be the highest virtue. His argument challenges the importance given to phronesis as the integrating virtue in Aristotle’s ethics. In his view, since primarily virtue is the actual performance of a virtuous act, not merely the knowledge of a virtuous act, the primary integrating virtue cannot be an intellectual virtue, which is the case with phronesis, but it should be a (genuine) virtuous act which embraces all the other virtues, which is the case of friendship love. For Rajský, friendship is a special and unique human good in which one realizes one’s humanity.

Summarizing the result section, friendship, according to Aristotle, Lewis, and MacIntyre, fosters happiness, virtue, and truth. It involves intimacy, shared interests, and moral growth. True friendship is rare, selfless, and a gift requiring openness, honesty, and mutual care beyond mere companionship or utility. Friendship is constituted not only by mutual sharing a particular common interest, but also by deep conversations (opening of intimacy), and a mutual strong bond (identification with the self of the other). Spending time together in a common interesting activity (cooperation) is necessary for friendship to arise and stay. The discussion about the interplay between friendship and the moral life revealed also that, while the ‘friendship for virtue’ approach sees friendship as aiding moral growth, the ‘virtue for friendship’ approach prioritizes friendship as the ultimate moral goal, with virtues sustaining it.

Discussion

The question whether this research is consistent with the national priorities of Latvia and with the priorities of the education sector is discussed further. This project on friendship and morality is linked to several priorities and objectives of the National Development Plan of Latvia for 2021–2027 (Saeima, 2020). In this plan, the Priority 1 is “Strong families, a healthy and active population”, whose Objective 3 is “Support strong family structures and intergenerational connectivity”. This research on friendship has the potential of strengthening friendly relationships among family members of different generations, which can contribute to achieving this objective. In addition, the research effort implemented in this project is in line with the Objective 3 “Enhance scientific research” under the Priority 2 “Knowledge and skills for personal and national growth”. Moreover, the Priority 6 “A united & open, safe and secure society” includes as Objective 1 to “Strengthen social cohesion and foster an inclusive society”. The advanced understanding of friendship and its interplay with developing moral attitudes, promoted by this research, is also a contribution to enhance social cohesion.

This research project also addresses several of the six priorities identified in the Latvian guidelines for scientific, technological development and innovation for 2021–2027 (Cabinet of Ministers, 2021a). Concretely, it addresses the priorities “Research for society” (the project responds to recent societal and educational need analysis), “Integration of higher education and research” (this conceptual friendship research is a first step

for developing future research projects involving both students and senior researchers), “Digital transformation and open science” (open access publications of this friendship research are foreseen), and “Innovation: stimulating development, promoting implementation” (the project puts the scientific foundation for further implementation of friendship education). The project also responds to several of the Key challenges for the R & D sector in Latvia (p. 10): for “Building a knowledge base for promoting excellent research” (the research produced advanced knowledge in the field of friendship and moral education).

The project is also in line with the Education Development Guidelines 2021–2027 Latvia (Cabinet of Ministers, 2021b), which states that one of the future emphases of Latvian education at individual level is on “developed character traits, values and habits” (p. 16), which, according to the task 2.1.1., should be reflected in general education by “the development of value-based habits” (p. 50). The topic of friendship addressed by this research is simultaneously a value, a moral habit to develop, and a motif for further moral development (Fernández González, 2019).

This research also contributes to the achievement of the objectives of the Strategy 2021–2027 of the University of Latvia (University of Latvia, 2021), in particular regarding the Development direction 1.1. “Research excellence”, and the Development objective 1.1.2. “To ensure excellence-oriented quality of scientific results”. It should be noted that, based on this friendship research, international partnerships are being strengthened and created. The cooperation network includes academic partners interested in the research topic, such as specialists in friendship and phronesis (the Trnavská univerzita v Trnave in Slovakia, the University of Navarra in Spain, the University of Reading in the UK), specialists in virtue research (The Jubilee centre for character and virtues at Birmingham University in the UK, the University of Gdansk), and specialists in promoting value education and friendship at school (the “Community of Research on Excellence for All” – CREA in Spain, the Centre of Ethics of Tartu University in Estonia). These partnerships will increase future research development opportunities.

Conclusion

This research discussed the theorization of deep friendship in key Western philosophers and the debate about the interplay between friendship and moral growth in recent scientific literature. The research contributed to strengthen the conceptual bases for generating new practical knowledge in the future, by investigating empirically the relationship between friendship and moral growth and designing educational programs for promoting virtue-based friendships at school. This line of inquiry is coherent with the national priorities of Latvia and with the priorities of the education sector.

Further research directions could include investigating the “vices of friendship” (Pismenny & Brogaard, 2022), i.e., the influence of friendship on moral standards (group violence, the mass effect), given the need of belonging and the fear of missing out typical of this age and the ambivalence of friendship. Also new directions in friendship research

going beyond Aristotelian virtue ethics (e.g., Akrivou & Fernández González, 2021) and the impact of friendships in deep connections among youngsters (Way, 2011) could be explored further. Another future line of inquiry regarding the practical implementation of friendship interventions is the potential of conversations as a moral education action (Noddings, 1994), in particular the use of dialogical gatherings, which were introduced to the scientific community by R. Flecha (2015) as successful education actions, and are being successfully implemented in different settings (e.g., García-Carrión, 2015; Khal-faoui et al., 2023; Padrós-Cuxart et al., 2021; Ruiz-Eugenio et al., 2023).

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UNDERSTANDING THE PROFESSIONAL DEVELOPMENT LEARNING NEEDS OF PRESCHOOL TEACHERS FOR INCLUSIVE EDUCATION

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ABSTRACT

This study explores the professional development learning needs of preschool teachers in the context of inclusive education in Latvia. Despite the global and national emphasis on inclusive education over the past two decades, its implementation remains uneven and highly dependent on the professional competence of educators. Recognizing that teachers' professional learning needs are central to effective inclusive education, this research aims to identify the specific learning needs of preschool teachers and examine how these needs vary based on teachers' length of service, level of education, preschool affiliation, and preschool type (municipal or private). The study employs a quantitative research design using a structured questionnaire administered to 99 preschool teachers across nine institutions in three Latvian municipalities. Data were analyzed using descriptive statistics, independent samples t-tests, and one-way ANOVA. The findings indicate that the most critical learning needs include implementing differentiated teaching and learning processes, acquiring diverse teaching methods, understanding inclusive education, and managing behavioral difficulties. Significant differences were observed in learning needs based on institutional type and individual teacher characteristics, highlighting the necessity of a tailored, context-sensitive approach to professional development. The study underscores the importance of individualized and school-tailored strategies in teacher training for inclusive education. It also reveals gaps in teacher readiness to include certain groups of children – such as gifted children or those with sensory and physical impairments – pointing to areas requiring greater policy and training focus. These results contribute to the development of more effective, evidence-based professional development models that align with the realities of inclusive preschool education in Latvia.

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Keywords: *inclusive education, professional development, preschool teachers, learning needs, Latvia*

Introduction

Although the concept of inclusive education was introduced into educational systems globally and in Latvia more than two decades ago, it continues to be described as an ongoing and evolving process, marked by varying interpretations and approaches to its implementation (Booth & Ainscow, 2002; Dignath et al., 2022, Nĩmante, 2021). The question of how to implement inclusive education most effectively, ensuring a high-quality educational experience for every child starting from the preschool level, remains highly relevant.

The European Agency for Special Needs and Inclusive Education (EASNIE, 2017), in developing the principles for high-quality inclusive preschool education, emphasizes the importance of initiating inclusive practices from the age of three – the age at which preschool typically begins in many countries. However, in Latvia children can enter preschool as early as 1.5 years of age, presenting an additional challenge for educators. The quality of inclusive education is significantly influenced by the teacher. Teacher professional competence is prerequisite for qualitative education (Kaļķe et al., 2022). Research conducted over recent decades confirms that the successful inclusion and development of each child is strongly determined by the attitudes, knowledge, skills, and practices of educators (Gidari & Kakana, 2021). In this context, the professional competence of teachers – encompassing both general and specialized competences – is of critical importance (Dignath et al., 2022; Nĩmante & Kokare, 2022; Skoćić-Mihĩć et al., 2022; Tippelt, & Heimlich, 2020). It is increasingly emphasized that a high level of professional competence in inclusive education is essential already at the preschool level (Weltzien et al., 2021 Murphy, 2022). However, this ideal is not consistently realized in practice (Ritoša et al., 2023; Tarune & Usca, 2024; Weltzien et al., 2021). One possible reason is the ineffectiveness of current professional development programs for teachers, which need significant reform (Guđjónsdóttir & Óskarsdóttir, 2023; Namsone, 2023). As it is suggested by research, to improve their effectiveness, professional development initiatives must become more targeted and individualized, addressing the specific learning needs of each teacher (Namsone, 2023).

Although there are wide range of research on professional development in Latvia (for example, latest, Nĩmante et al., 2025), to date, very little reserch is related to preschool teacher professional development for inclusion (see for example Mikelsone et al., 2022, Tarune & Usca, 2024), none has focused specifically on the professional learning needs of preschool teachers in the context of inclusive education, which highlights the relevance and necessity of this study. To design effective professional development programs for inclusive education at the preschool level, it is crucial to gain a clear understanding of teachers' diverse learning needs.

Thus, the aim of this study is to identify the professional learning needs of preschool teachers related to inclusive education and to examine whether these needs vary depending on teachers' length of service, educational background, affiliation with a specific preschool, and the type of preschool (public or private).

The research questions are:

- RQ1. What are the professional development needs of preschool teachers in the context of inclusive education?
- RQ2. Do the professional development needs of preschool teachers differ based on their length of service, level of education, affiliation with a particular preschool, or the type of preschool (municipal or private)?

Theoretical Framework

Inclusive education is widely recognized as an ongoing and dynamic process, the success of which is largely dependent on teachers. In parallel, the professional development of teachers must also be viewed as a continuous and evolving process, as educators are consistently faced with new challenges in their daily practice (Booth & Ainscow, 2016; Murphy, 2022). Enhancing the professional competence of preschool teachers for inclusive education requires them to be capable of responding effectively to the diverse learning needs of all children. This includes the ability to assess and adapt the learning process based on evaluative data; to critically reflect on and evaluate their own professional competencies and practices; to engage in collaborative evaluation with colleagues; and to improve their skills through practical, context-based experiences within educational settings (National Educational Content Center, 2020). Overall, teachers have to adapt to diverse children. However, research suggests that professional development for teachers to promote their competencies for inclusive education is not always effective. One of the primary shortcomings is that professional development initiatives are often overly general and do not adequately address the specific needs of individual educators. For instance, results from the 2018 OECD Teaching and Learning International Survey (TALIS, 2019) indicate that one of the most significant barriers to teachers' professional development is the mismatch between the content offered and their actual learning needs. Teachers increasingly express a desire for more personalized and relevant professional development opportunities that support their capacity to implement inclusive practices. Other studies similarly highlight that the development of competencies deemed important by individual teachers is often insufficiently addressed (Skočić-Mihić et al., 2022). This is partly due to a lack of attention to the unique learning needs of each teacher. Research further indicates that preschool teachers' professional development needs in inclusive education are influenced by various factors, including their institutional affiliation, professional experience, and varying levels of knowledge and skill (Weltzien et al., 2021). In order to effectively identify the individual professional development needs of preschool teachers within the context of inclusive education, it is essential first to define the competences required for inclusive teaching at the preschool level. However, just as there is no universally accepted definition of inclusive education, there remains a lack of consensus among educational researchers, policymakers, and early childhood educators regarding the profile of competences that characterize an inclusive preschool teacher (Nasiopoulou et al., 2017). For the purposes of this study, the research instrument

(questionnaire) was developed based on a comprehensive review of the literature identifying the key components of professional competence in inclusive education. These components include teachers' attitudes, beliefs, knowledge, understanding, and practical skills related to inclusive practices (see Table 1).

Table 1 Professional competence profile of a preschool teacher in inclusive education

Competencies	Criteria characterizing it	Theoretical basis (authors)
<i>Attitudes and beliefs</i>	Belief in inclusive education as a foundation for a fair and non-discriminatory society	Ainscow, 2024
	Diversity in education is perceived as a resource and value	EASNIE, 2012; Booth & Ainscow, 2016
	Supports the inclusion of every child in pre-school by promoting their active participation	UNESCO, 1994; EASNIE, 2011
	Accepts and believes in each child's abilities and potential for growth	Nimante, 2021
	Accepts and supports changes related to inclusive education	EASNIE, 2022
	Collaboration with all members of the educational community is perceived as support for implementing inclusive education	EASNIE, 2012; Weltzien et al., 2021
	Supports the provision of adapted learning content and process for children with specific learning difficulties	EASNIE, 2012; Nimante, 2021; Carter, 2022
	Active involvement in the assessment and development of professional competence in inclusive education	EASNIE, 2012; Smith et al., 2023
<i>Knowledge and understanding</i>	Philosophy and principles of inclusive education	Booth & Ainscow, 2016; Nimante, 2021
	Educational policy guidelines and legislation related to inclusive education	EASNIE, 2012; Nimante, 2021
	Inclusive culture and values within the educational institution	Booth & Ainscow, 2016
	Aspects of diversity in education – categories of difference	Mitchell, 2016
	Early identification of children's individual skills and needs	Nimante, 2021; Ritoša et al., 2023; Skočić-Mihić et al., 2022
	Early intervention	Nimante, 2021
	Children's special needs	Guðjónsdóttir, 2023; Wearmouth, 2019
	Various learning approaches and learning models	Majoko, 2019
	Development and implementation of individual education plans	Ghosh, 2023; Nimante, 2021
	Differentiation of the learning process	Carter, 2022; Nimante & Kokare, 2022

Competencies	Criteria characterizing it	Theoretical basis (authors)
	Positive behavior support and classroom management approaches	Majoko, 2019
	Creating an inclusive learning environment based on the diverse needs of children	Carter, 2022; Ainscow, 2024
	Reflection as an opportunity for a child to provide feedback on their skills, interests, needs, achievements and further goals	Holzinger et al., 2018; Skočić-Mihić et al., 2022; Weltzien et al., 2021
<i>Practical skills</i>	Setting, monitoring and evaluating the children's individual achievements in planning the learning process	Majoko, 2019; Donath et al., 2023; Khamzina et al., 2024
	Establishing cooperation with all members of the educational community	Booth & Ainscow, 2016; Weltzien et al., 2021
	Engaging in team-based learning and collaboration	Strecker et al., 2022; Weltzien et al., 2021
	Sharing examples of good practice	EASNIE, 2022
	Effectively involving families in the child's educational process	Kyriazopoulou et al., 2022; Weltzien et al., 2021
	Individualizing the learning process	Carter, 2022; Nĩmante, 2021
	Applying diverse learning approaches and methods	Carter, 2022; Majoko, 2019; Nĩmante, 2021; Smith et al., 2023
	Creating a learning environment that supports children with different needs	Ghosh, 2023; Carter, 2022; Nĩmante, 2021
	Using augmentative and alternative communication to support effective interaction	Ghosh, 2023
	Creating an emotionally safe learning environment	Hachem et al., 2022
	Demonstrating self-efficacy in inclusive education	Dignath et al., 2022
	Identifying the need for improving one's professional competence	Weltzien et al., 2021

Methodology

This study employs a quantitative research design, utilizing a survey instrument, which is recognized as one of the most effective methods for identifying teachers' professional learning needs (Weltzien et al., 2021) and remains one of the most widely used tools in educational research (Geske & Grĩnfelds, 2006). The research adopts a descriptive approach with the aim of exploring and characterizing the current state of professional competence development among preschool teachers in the context of inclusive education by identifying their learning needs.

Based on a comprehensive review of the relevant scientific literature, a structured questionnaire was developed. The questionnaire consists of two main sections: demographic

information, which includes items related to the respondent's level of education, years of professional experience, and affiliation with a particular type of preschool (municipal or private). Professional and experiential background, which includes questions related to teaching experience, exposure to inclusive education, and items designed to identify current professional learning needs in inclusive education. This section also explores potential factors influencing these learning needs. In total, the second section contains 20 statements.

The following learning needs of preschool teachers in inclusive education were included in the questionnaire as statements:

- S1 – it is important for me to improve my general knowledge and understanding of inclusive education;
- S2 – it is necessary for me to enhance my knowledge of methods for evaluating children's individual skills and needs;
- S3 – it is necessary for me to improve my knowledge and understanding of early screening and intervention;
- S4 – it is necessary for me to improve my knowledge and skills on how to create an inclusive environment that is suitable for every child;
- S5 – it is necessary for me to improve knowledge and skills on how to implement a differentiated learning process in inclusive education;
- S6 – it is necessary for me improve knowledge and skills about different teaching methods;
- S7 – it is necessary for me to improve knowledge and skills on how to create an emotionally safe and supportive environment for every child;
- S8 – it is necessary for me improve knowledge and skills about children's behavioral difficulties;
- S9 – it is necessary for me to improve skills for effective cooperation with the child's family;
- S10 – it is currently important for me to improve my knowledge and skills in order to include a particularly talented child in my group;
- S11 – it is currently important for me to improve my knowledge and skills to include minority children with limited state language skills in my group;
- S12 – it is currently important for me to improve my knowledge and skills to include a child who represents a different race and/or culture in my group;
- S13 – it is currently important for me to improve my knowledge and skills to include a child with autism spectrum disorders in my group;
- S14 – it is currently important for me to improve my knowledge and skills to include a child with attention deficit hyperactivity disorder in my group;
- S15 – it is currently important for me to improve my knowledge and skills to include a child with certain health problems in my group (e.g., diabetes, epilepsy, food intolerance, allergy, etc.);
- S16 – it is currently important for me to improve my knowledge and skills to include a child with a speech disorder in my group;

- S17 – it is currently important for me to improve my knowledge and skills to include a child with hearing impairment in my group;
- S18 – it is currently important for me to improve my knowledge and skills to include a child with visual impairment in my group;
- S19 – it is currently important for me to improve my knowledge and skills to include a child with mobility impairments in my group;
- S20 – it is currently important for me to improve my knowledge and skills to include a child with identified/diagnosed intellectual disabilities in my group

Data collection was conducted between October 15 and November 8, 2024, through the distribution and completion of survey questionnaires (paper version). We used non-probability sampling (Etican et al., 2016). A total of 99 completed responses were obtained ($n = 99$). A non-probability sampling method was employed, specifically convenience sampling, which involves selecting participants based on their accessibility and willingness to participate (Geske & Grinfelds, 2020). Participants included preschool teachers from nine preschools located in Ogre Municipality, Ādaži Municipality, and Riga. Of the respondents, 60% represented municipal preschools and 40% represented private preschools. According to the most recent statistical data, during the 2023/2024 academic year in Latvia, 76% of preschools were municipal and 24% were private. While the study sample does not fully mirror the national distribution, the inclusion of both preschool types offers a basis for comparing responses between municipal and private institutions. This deviation will be taken into account during the interpretation of comparative results. To describe the sample: the respondents exhibit varied levels of professional experience as preschool educators (see Figure 1). The least represented group consists of teachers with up to 2 years of experience, comprising 16% of the sample. Those with 3 to 5 years of experience make up 24%, while the largest group – those with more than 6 years of experience – constitutes 60% of the respondents.

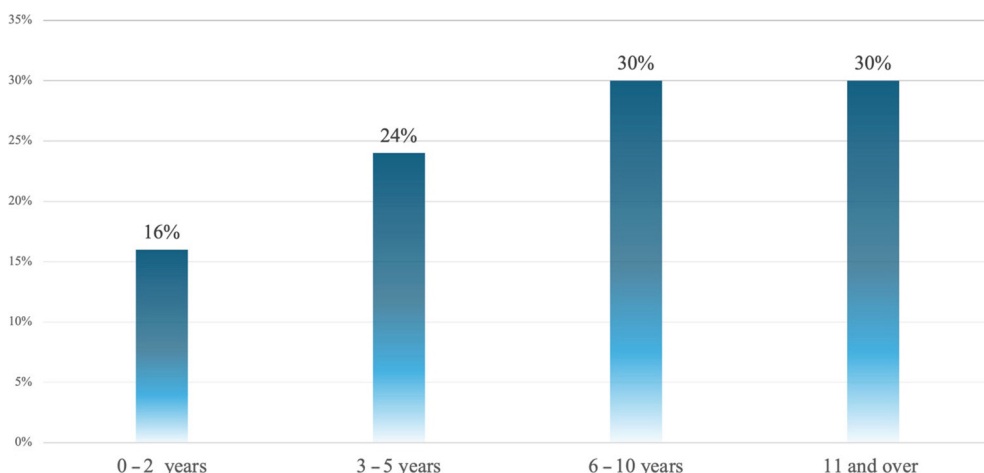


Figure 1 Respondents' work experience

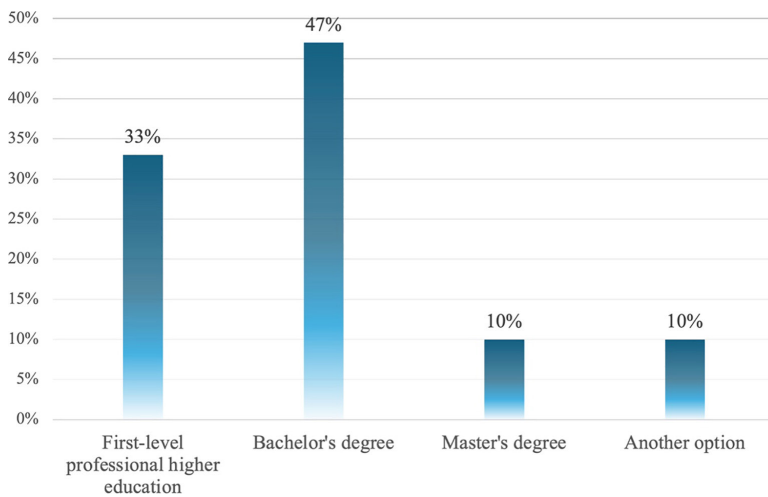


Figure 2 Preschool teachers' education

Among the respondents who participated in the study, 47% reported holding a bachelor's degree, 33% had completed first-level professional higher education, 10% held a master's degree, and 10% selected the "other" category (see Figure 2). Survey results also revealed that 24% of respondents are currently engaged in ongoing studies. Within this subgroup, 29% have completed secondary education, 50% possess a first-level professional higher education qualification, 17% hold a bachelor's degree, and 4% have obtained a master's degree.

In the answer "other option", respondents indicated several options for this question, for example, having obtained a first-level professional higher education and a bachelor's degree, as well as indicating higher education that is not related to the profession of a preschool teacher, for example, a master's degree in public relations. Several respondents in the "other option" indicated secondary education, one indicated secondary vocational education.

Data analysis was conducted using IBM SPSS Statistics version 28.0.1.0. The analysis included both descriptive statistics (arithmetic mean, standard deviation, and variance) and inferential statistical methods, including Cronbach's alpha (Cronbach's $\alpha = 0.857$) coefficient for reliability testing, independent samples t-test, and null hypothesis testing.

The ethical aspects of this research were addressed through discussions between authors in accordance with ULFESP regulations for Master study programs students. The type and scope of the study did not involve interventions, sensitive personal data, or vulnerable groups that would require formal review. Therefore, handling ethical considerations via researcher-supervisor dialogue was deemed sufficient and in line with institutional practice. Ethical questions were continuously reflected upon during the research process. The research adhered to fundamental ethical principles of academic work. Including: informed consent (participants who were involved, they were informed about the purpose of the study and gave consent), confidentiality and anonymity (data

were handled responsibly, identifying details removed when necessary), voluntary participation (no coercion, participants could withdraw at any stage), integrity and honesty (data collection, analysis, and reporting were conducted transparently and without fabrication or manipulation).

Results

The findings regarding preschool teachers’ professional development needs confirm the ongoing relevance of enhancing their professional competence in implementing inclusive education, encompassing a wide range of knowledge and skills (see Figure 3).

The majority of respondents emphasized the need to improve their ability to implement differentiated teaching (91%) and to acquire a variety of teaching methods (90%). A significant proportion of teachers (89%) also reported the necessity of improving their general knowledge and understanding of inclusive education, as well as their professional competence in working with children who exhibit behavioral difficulties. Regarding the creation of an inclusive environment for all children, 85% of respondents agreed or strongly agreed that it is essential to enhance their skills and knowledge in this area. Additionally, 70% of teachers identified the creation of an emotionally safe and supportive environment as an urgent area for professional development. Further, 84% of respondents highlighted the need to strengthen their knowledge of early childhood screening and intervention, while 83% indicated the importance of understanding methods for assessing individual children’s skills and needs. The development of effective collaboration skills with children’s families was also recognized as a learning need by 69% of teachers.

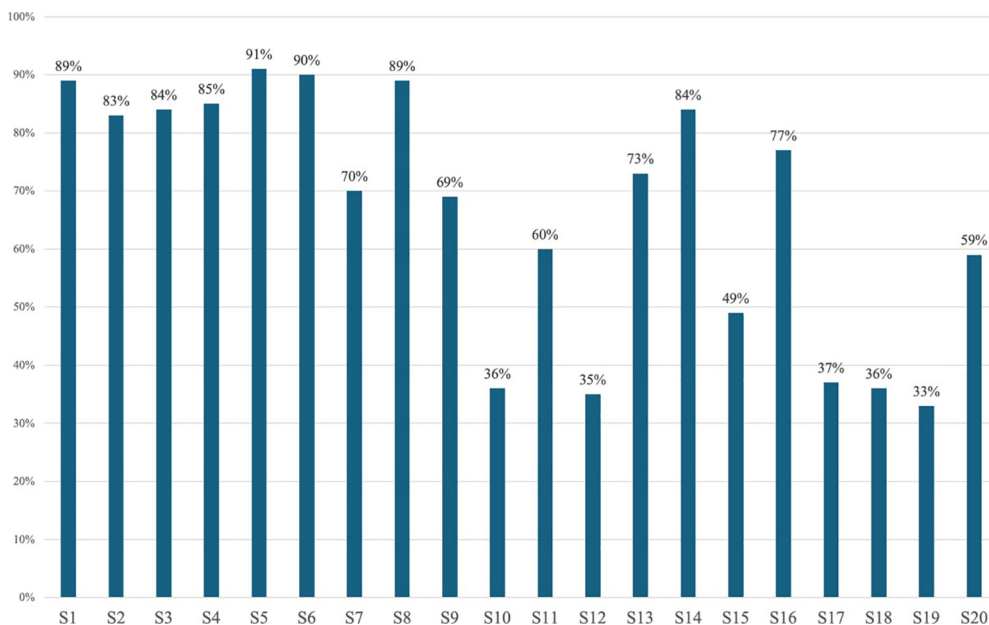


Figure 3 Current learning needs of preschool teachers in inclusive education

Conversely, the survey revealed several less prioritized areas of professional competence development. Only 37% of respondents identified a need to improve their knowledge and skills for including children with hearing impairments, 36% for supporting gifted children and those with visual impairments, 35% for children from diverse racial or cultural backgrounds, and 33% for children with motor disabilities.

To explore potential differences in professional learning needs between municipal and private preschool teachers, an independent samples t-test was conducted using SPSS statistical software (see Table 2).

Table 2 Descriptive Statistics

Variable	Preschool type	M	Sig	T-test
S1	Municipal	3.12	.048*	0.832
	Private	3.23		
S2	Municipal	2.90	.445	3.367**
	Private	3.25		
S3	Municipal	3.04	.218	0.737
	Private	3.13		
S4	Municipal	2.93	.891	2.618**
	Private	3.23		
S5	Municipal	3.16	.696	0.436
	Private	3.20		
S6	Municipal	3.03	.916	1.633
	Private	3.21		
S7	Municipal	2.71	.033*	2.208**
	Private	2.98		
S8	Municipal	3.10	.499	1.589
	Private	3.28		
S9	Municipal	2.66	.003*	3.518**
	Private	3.10		
S10	Municipal	2.22	.645	0.399
	Private	2.28		
S11	Municipal	2.54	.392	1.550
	Private	2.79		
S12	Municipal	2.30	.637	0.478
	Private	2.23		
S13	Municipal	2.84	.307	0.800
	Private	2.95		
S14	Municipal	3.13	.099	0.708
	Private	3.03		

Variable	Preschool type	<i>M</i>	<i>Sig</i>	<i>T-test</i>
S15	Municipal	2.54	.263	0.782
	Private	2.41		
S16	Municipal	2.89	.473	1.421
	Private	3.08		
S17	Municipal	2.31	.169	0.356
	Private	2.26		
S18	Municipal	2.30	.785	0.644
	Private	2.21		
S19	Municipal	2.22	.489	0.442
	Private	2.15		
S20	Municipal	2.55	.441	0.862
	Private	2.68		

* Sig value < 0.05 – statistically significant differences between groups

** T value [t module] > 1.96 – statistically significant differences between groups

The results of the independent samples t-test enable a comparison of mean values between two groups – municipal and private preschool teachers – to determine whether statistically significant differences exist in their perceived professional learning needs. As shown in Table 2, the analysis reveals differences in the dispersion and mean values for several dependent variables related to professional development in inclusive education. Although the sample's distribution of municipal (60%) and private (40%) preschools only partially reflects the national proportions in Latvia (76% and 24%, respectively), the results can be considered indicative. In many of the measured areas, the mean values across both groups are similar, suggesting common trends in professional learning needs. However, in several specific areas, private preschool teachers report higher mean values, indicating a greater perceived need for professional competence development. These areas include assessment of children's individual skills and needs; creating an inclusive environment for every child; utilizing diverse teaching methods in inclusive education; developing effective collaboration with children's families; inclusion of children with speech and language disorders. These differences may be attributable to the greater exposure to diversity that teachers in private institutions experience daily, making these aspects of inclusive education particularly salient.

Statistical analysis also identified significant differences between the two groups in certain learning needs at the 95% confidence level. Specifically, statistically significant differences were observed in general knowledge and understanding of inclusive education, creating an emotionally safe and supportive environment, establishing effective cooperation with children's families. The p-value for the need to develop effective family collaboration (Sig = 0.003) indicates a very high level of statistical significance, underscoring the importance of this professional development area, particularly for private preschool teachers. To further investigate the influence of other factors on teachers' learning needs, a one-way

ANOVA was conducted to test the null hypothesis regarding the relationship between the independent variables – namely, work experience, education level, and affiliation with a specific preschool institution – and the dependent variables in the second section of the questionnaire (see Table 3). The variable “affiliation with a preschool educational institution” denotes the specific preschool (out of nine) to which each respondent belongs.

The results of the ANOVA test indicate that preschool teachers’ length of service, level of education, and affiliation with a specific preschool institution are statistically significant factors influencing several dependent variables related to professional development in inclusive education.

Statistically significant differences were found in the following areas: the need to enhance knowledge of methods for assessing a child’s individual skills and needs; the need to improve knowledge and skills related to diverse teaching methods; the need to develop knowledge and skills for creating an emotionally safe and supportive environment for every child. Furthermore, both length of service and educational level significantly affects learning needs in relation to creating an inclusive environment tailored to each child, implementing differentiated instructional strategies within inclusive education.

Table 3 Analysis of variance ANOVA

Variable	Sig		
	Work experience	Education	Belonging
S1	< .001*	.152	.312
S2	< .001*	.010*	< .001*
S3	.013*	.179	.106
S4	< .001*	.032*	.067
S5	.002*	< .001*	.168
S6	.001*	.005*	.047*
S7	.002*	.034*	< .001*
S8	.092	.182	.357
S9	.154	.203	.025*
S10	.192	.237	.011*
S11	.417	.006*	.196
S12	.495	.021*	.035*
S13	.842	.002*	.018*
S14	.770	.004*	.494
S15	.629	.050	.745
S16	.832	.322	.035*
S17	.041*	.136	.624
S18	.173	.239	.618
S19	.096	.294	.891
S20	.326	.016*	.088

* $p < 0.05$ – statistically significant differences between groups

The analysis also reveals that educational attainment and preschool affiliation significantly influence teachers perceived need for developing skills in including children from different racial and cultural backgrounds, including children with autism spectrum disorders. Additionally, the data show that certain dependent variables are significantly affected by only one independent variable. Length of service significantly impacts the perceived need to enhance general knowledge and understanding of inclusive education; knowledge of early screening and intervention; competence in including children with hearing impairments. Educational level significantly influences the perceived need to improve inclusion of minority children with limited proficiency in the national language; inclusion of children with attention-deficit/hyperactivity disorder (ADHD); inclusion of children with diagnosed intellectual disabilities.

Preschool affiliation has a statistically significant effect on learning needs in building effective cooperation with children’s families; inclusion of gifted and talented children; inclusion of children with speech and language impairments. To further examine the variability in learning needs across different preschool institutions, a Scheffé post-hoc test was conducted. The results (see Table 4) reveal distinct trends in the professional learning needs of preschool teachers across institutions. To visualize these patterns clearly, Table 4 uses color coding:

- 1) dark green indicates learning needs for which 90% or more of respondents selected “agree” or “strongly agree”;
- 2) light green highlights learning needs endorsed by 80% to 89% of respondents.

The preschools in the study are anonymized and denoted by the letters A, B, C, D, E, F, G, H, and J.

Table 4 Preschool teachers learning needs in different preschools

Identified learning needs	Preschools results									
	A	B	C	D	E	F	G	H	J	
S1	100%	100%	85%	78%	85%	94%	80%	89%	90%	
S2	85%	100%	85%	100%	67%	72%	90%	100%	90%	
S3	71%	85%	100%	90%	76%	94%	90%	88%	70%	
S4	100%	100%	100%	100%	71%	72%	90%	100%	80%	
S5	85%	100%	100%	100%	90%	89%	90%	89%	89%	
S6	100%	71%	100%	100%	76%	94%	70%	100%	89%	
S7	100%	100%	100%	50%	57%	73%	55%	78%	80%	
S8	100%	100%	100%	80%	86%	88%	73%	89%	100%	
S9	100%	85%	100%	90%	53%	61%	55%	55%	70%	
S10	33%	0%	50%	60%	52%	12%	25%	33%	40%	
S11	50%	85%	66%	70%	67%	36%	70%	44%	60%	
S12	50%	0%	50%	50%	43%	18%	44%	44%	20%	
S13	50%	100%	50%	90%	76%	77%	67%	88%	50%	
S14	71%	72%	68%	90%	90%	87%	89%	89%	80%	
S15	67%	43%	34%	40%	57%	47%	44%	55%	40%	
S16	68%	85%	67%	90%	75%	81%	67%	75%	80%	
S17	33%	14%	34%	40%	35%	35%	44%	55%	50%	
S18	33%	14%	50%	50%	38%	35%	56%	22%	30%	
S19	33%	14%	34%	40%	35%	29%	44%	23%	30%	
S20	67%	34%	50%	100%	65%	61%	44%	44%	30%	

The findings presented in Table 4 reveal that while certain professional learning needs are universally relevant across all preschools, others vary notably between institutions. For instance, educators in four preschools identified the development of collaborative skills with children's families and the ability to create an emotionally safe and supportive environment as particularly pressing areas for professional growth. Conversely, the data also indicate that some learning needs are currently not prioritized in any of the participating preschools. These include the knowledge and skills required to support the inclusion of gifted and talented children, children from different racial or cultural backgrounds, and children with specific health conditions or sensory and physical impairments (e.g., hearing, vision, or mobility challenges).

Discussion

Regarding the first research question, “What professional development needs do preschool teachers have?”, the findings of the study indicate that the most prominent learning needs among preschool teachers relate to enhancing their competence in implementing differentiated teaching and learning processes and acquiring diverse teaching methods. Additionally, there is a clear need to strengthen teachers' general knowledge and understanding of inclusive education, alongside improving their capacity to work effectively with children exhibiting behavioral difficulties. The majority of respondents emphasized the importance of developing knowledge and skills necessary for creating an inclusive learning environment that supports the needs of all children. This includes understanding early screening and intervention strategies and acquiring the ability to assess a child's individual abilities and needs. Another area of need frequently cited by teachers was the enhancement of skills related to establishing effective and collaborative partnerships with families. The results also underscore the urgency of improving teachers' competencies in the inclusion of specific groups of children within the classroom setting. These include children with attention deficit hyperactivity disorder (ADHD), speech disorders, autism spectrum disorders (ASD), minority children with limited proficiency in the state language, and children with identified or diagnosed intellectual disabilities. Previous studies in Latvia have already identified the need for teacher training in individually focused approaches, methods aligned with the competency-based approach, and strategies that support the inclusion of all children while ensuring equitable educational opportunities and a sense of belonging (Miķelsone et al., 2022). On the other hand, while these findings reaffirm some previously established areas of professional development, they also reveal new, context-specific needs. One example includes the application of the BAASIK screening tool, developed in Latvia, for assessing children's developmental needs (Raščevska, Ed., 2024). Furthermore, the data suggest that there is no shared or consistent understanding of inclusive education among teachers, reflecting a challenge documented internationally, where consensus on the concept and practice of inclusive education remains elusive (Nasiopoulou et al., 2017). When analyzing learning needs across different preschools to identify collective development priorities, the data reveal

that certain areas are currently perceived as less relevant by teachers. These include the inclusion of gifted and talented children, children from different racial or cultural backgrounds, and children with specific health problems, or sensory and physical disabilities (e.g., hearing, vision, or motor impairments). Several interpretations can be posited: such children may not be enrolled in the surveyed preschools, their differences may not be formally recognized, or they may be perceived as less significant by the educators. Additionally, it may be the case that children with more complex needs attend specialized institutions – formerly known as special preschools and now referred to as development centers – where tailored programs are implemented. This assumption is partly supported by national statistical data (see source www.viis.gov.lv, SEIC, 2024). The limited prioritization of gifted education within preschools also warrants attention. The findings do not imply the absence of gifted children but suggest that this aspect of inclusive education may be under-recognized. Research by Kettler et al. (2017) indicates that early childhood education often lacks coherent policies, theoretical frameworks, and tools for identifying giftedness at a young age. As a result, preschool teachers may have limited professional competence in working with this group of children. Similar concerns are echoed by Mohamed and Elhoweris (2022), who found that early childhood educators often struggle to define giftedness and identify appropriate assessment instruments. These authors advocate for targeted professional development programs that address the identification and support of gifted children, incorporating both formal training and mentoring from experienced educators.

In response to the second research question, “Are there differences in the professional development needs of preschool teachers based on their years of service, level of education, affiliation to a specific preschool, or type of preschool (municipal or private)?”, the results indicate that preschool teachers’ professional learning needs for inclusive education vary significantly at both the individual and institutional levels. Differences are evident across types of preschools (municipal vs. private), institutional affiliations, and based on educators’ professional experience and educational qualifications. These findings reinforce the importance of a differentiated approach to professional development, one that considers the specific context and characteristics of individual teachers and institutions. The aggregated results suggest that preschool teachers exhibit diverse professional learning needs in relation to inclusive education. This diversity is influenced by several factors, including the type of preschool (municipal or private), years of professional experience, educational qualifications, and institutional affiliation. Notably, the variability in learning needs among different preschools was also observed during the pilot phase of the study through interviews with preschool administrators, who confirmed that preschools face distinct challenges in implementing inclusive practices. These findings align with previous research (e.g., Weltzien et al., 2021), which highlights that preschool teachers’ professional development needs in inclusive education are shaped by institutional context, professional experience, and individual levels of knowledge and skill. The study thus substantiates conclusions in the existing literature which emphasize

that teachers' professional learning needs should be assessed on an individual basis, given their substantial variability across different educational settings.

Conclusions

Overall, the findings indicate that the professional development needs of preschool teachers in the context of inclusive education are heterogeneous and influenced by both individual factors – such as professional experience and educational attainment – and institutional conditions, including the type and specific characteristics of the preschool. These results suggest that effective planning for the development of teachers' professional competence must take into account both the individual learning needs of educators and the collective needs of each preschool as an institution. The identified diversity of learning needs further implies that a standardized, one-size-fits-all approach to professional development will likely be ineffective. A key conclusion emerging from the study is the widespread need among preschool teachers for a foundational understanding of inclusive education. This highlights the importance of providing in-depth, conceptual clarification of inclusive education to foster a consistent and shared approach across the preschool education system. At the same time, the results reflect a generally positive disposition among preschool teachers toward professional development, representing a critical precondition for the successful implementation of high-quality inclusive education.

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TEACHERS' OPINIONS ON THE FEASIBILITY OF IMPLEMENTING THE DESIGN PROCESS IN THE FIELD OF TECHNOLOGY IN PRIMARY SCHOOLS

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ABSTRACT

The goal of the subject 'Design and Technology' is to foster an understanding of the creation of products and services in students, taking into account human needs and applying the basic principles of design thinking. During the learning process, students are given the opportunity to practically create products, services, and environmental solutions that are useful to themselves and society, plan the design process, use safe techniques, tools, and digital devices, choose suitable materials, and create a healthy working environment. The design process involves the selection and implementation of methods for developing design thinking, which, in turn, is the responsibility of the teachers. The aim of the study is to analyze teachers' opinions on the feasibility of the design process in primary schools. A self-designed questionnaire for teachers was used as a research tool. Data processing was performed using the SPSS program, employing the following methods: Mann-Whitney test, Kruskal-Wallis test, correlation, Kolmogorov-Smirnov test, and frequency analysis. The research sample consisted of 30 teachers from the first stage of primary education who teach the subject 'Design and Technology'. The results of the questionnaire revealed that the teacher's knowledge and experience, the creative environment, safe work equipment, and the age stage, as well as the chosen methods, play an important role in the successful implementation of the design thinking process. If any of these aspects are not well-planned, teachers most often face difficulties and negative emotions. The development of design thinking in relation to the implementation of the design process in schools can be effectively guided by a teacher who understands the specifics and importance of this type of thinking in the student's development.

Keywords: *design and technology, design process, design thinking, primary school, survey, teacher*

Introduction

Design thinking can be viewed as a way of thinking, a method, or a process that changes the world's beliefs, contributes to the identification of various problems and

the realization of new ideas, creating services, strategies and products (Serrat, 2010; Lee & Wong, 2015; Dell’Era et al., 2024). At the moment, design thinking is considered an approach that helps to cope with the challenges of the 21st century in various fields (Efeoglu et al., 2013), although the concept of design thinking began to be talked about in the world since the late 60s of the 20th century (Simon, 1969). In today’s world, problems and situations are increasingly emerging in which people do not have previous experience and solution steps, so it is important to generate ideas that will contribute to insights into creative and new solutions (Owen, 2007). The basis of design thinking allows for a deeper and broader study of economic, social, political and technological problems. Design thinking has become an important aspect of human growth in various fields, including education. The school is the place where we nurture the society of the future, so it is important to use design thinking as a tool to improve the learning process (Razali et al., 2022).

The Ministry of Education and Science (2018), proposed changes in the approach to education in Latvia in order to develop, approbate and implement in succession the content and approach to learning of general education, which would promote more effective preparation of pupils for the life of the 21st century. Not only in Latvia, but also in other parts of the world, the understanding of what knowledge and skills will be needed in the future society is currently changing (Izglītības un zinātnes ministrija/ Ministry of Education and Science, 2018).

The design thinking process for educating students and developing various skills in Latvian schools is included in the acquisition of the technology field subject ‘Design and Technologies’. In education, design thinking is oriented towards learning, which involves actively solving problems and promoting influential change (Lor, 2017; Krumina, 2018). The object ‘Design and Technology’ aims to create an understanding of the creation of products and services, taking into account human needs and observing the basic principles of design thinking. During the learning process, the student is given the opportunity to practically create products, services and environmental solutions useful for himself or herself and society, plan the design process, use safe techniques, tools and digital devices, choose suitable materials and create a healthy working environment (Skola2030, 2019b).

By implementing design thinking in primary school classes, students develop practical skills, mutual cooperation and the implementation of creative ideas. Pupils, by developing a variety of skills, need a creative tool to be able to engage and participate in a society where change is continuous. Design thinking provides a powerful alternative and challenges students to find answers to questions that are relevant to them (Carroll et al., 2010). The subject ‘Design and technology’ covers the study of many topics related to both theoretical knowledge and practical work. Technologies in education are associated with the formation of the creative stimulus of the child, the implementation and verification of their ideas. The study of the subject ‘Design and Technology’ allows experiencing joy and a sense of accomplishment for the work done (Hart-Anderson & Holme, 2022).

The aim of the study: to study the characteristics of design thinking and analyze the opinions of teachers about the possibilities of implementing the design process in primary school.

Research methods: theoretical: literature analysis; empirical: survey; processing of the obtained data in the program IBM SPSS Statistics 29.

Characteristics of design thinking

Design thinking is inherently the promotion of experience and the creation of a product that is associated with creative activity. Creativity is considered to be conscious thinking and acting towards invention, creation and influenced by surrounding circumstances (Gaveika, 2016; Gralewski & Karwowski, 2012). Creativity is a unique and individual skill of a person that can be applied in any field (Brakovska, 2018). Design thinking has its own specifics, which differ from the above concepts. Design thinking is multidimensional, so it cannot be explained within the framework of a single concept (Malekzai, 2023). Design thinking is characterized by features that form a set and reveal its essence.

Summing up the characteristics of design thinking (see Tab. 1), it can be concluded that the essence of design thinking is diverse, since the concept includes the ability to dare to implement ideas, correct previously made mistakes, cooperate in groups, look for sustainable solutions. Design thinking changes a person's understanding of the realization of opportunities and creates greater confidence in the ability to influence the direction of the world. Crucially, by learning the design thinking process, people can hone their skills, make responsible decisions and become more open to unknown situations. In addition, the result of the design thinking process is always innovative.

Table 1 The Essence of Design Thinking (created by the authors based on Owen, 2007; Baeck & Gremett, 2012)

Feature	Description
Problem-solving	Awareness of the problem and the ability to find multiple solutions through critical thinking and research.
Originality	The ability to come up with and create unconventional solutions using modern technologies.
Flexibility	The ability to accept different viewpoints and adapt to non-standard situations.
Responsibility	An attitude that defines the quality of decisions made and actions taken.
Empathy	When implementing ideas, considering the desires and needs of people.
Sustainability	Human creative activity impacts the surrounding environment, so it's important to think about sustainable material use and product development.
Multifunctionality	The developed product is designed to be used in multiple ways, allowing users to find the most suitable application.
Awareness of mistakes	Not being afraid of failures, as the work process provides opportunities to identify, analyze, and correct mistakes.
Experimentation	The courage to take risks and explore questions that uncover new directions.
Collaboration	Working in a team and communicating with like-minded individuals promotes more effective outcomes.

It is important to update design thinking in the field of education as a tool for planning and organizing work, in order to provide students with the opportunity to improve communication skills, creativity, and the ability to express their opinions. By learning the approach of design thinking and tackling complex challenges, students begin to understand the importance of sustainable development, generating benefits in various areas (Odewole et al., 2023). Design thinking in the learning process helps students become empathetic, flexible, and innovative problem-solvers who understand the possibilities of technology, societal needs, and the necessity of sustainable solutions for the future (Charles, 2022).

Thus, it can be concluded that by changing their way of thinking, people can promote sustainable development, as thoughtful decisions and meaningful actions create a positive impact on the environment. In the design thinking process, anyone can create functional products beneficial to society that can be used in the long term. It is important to think about sustainable development in various fields, which is why design thinking is a comprehensive tool to be used in businesses and schools.

Design thinking is a non-linear and interactive process in which problems are defined, the needs of the involved people are understood, ideas are generated, prototypes are developed, and testing is conducted. Anyone can create revolutionary solutions, which is why it is essential to understand and implement the steps of the design process (Dam & Siang, 2017).

Design thinking is an approach that encourages taking specific steps to solve a real problem by creating a prototype and basing it on feedback (Charles, 2022).

E. and Ch. Bushman (Bušmane & Bušmanis, 2020) suggest integrating design thinking in schools by implementing a three-step model: understand, create, and offer. Introducing children to the design thinking process by offering age-appropriate tasks can build an understanding of the need to explore, generate ideas, and test outcomes.

The first step is the student's understanding, which means exploring and delving into the context of the problem or challenge. In the exploration phase, empathy plays a crucial role, as this ability allows one to understand not only their own needs but also to satisfy the desires of peers and others. The student must be able to evaluate and recognize the essence, relevance, and necessity of a topic of interest in order to find answers and solutions. A deep understanding builds the student's knowledge and experience base, which fosters creativity.

Following this is the second step in promoting the development of design thinking, which involves generating various ideas. By expressing their opinion and participating in discussions, students encourage diverse approaches to achieve the set goals. In the idea phase, the key condition is to generate as many ideas as possible so that the right solution can be selected in the final step.

In the third step, the main idea is implemented and presented to the target audience to test and correct errors (Bušmane & Bušmanis, 2020). Feedback and opinions from others can improve the quality of the implemented idea, allowing the student to return to one of the steps and refine their decision.



Figure 1 7-step design thinking process

In the field of technology education, to build an understanding of design and technology, students should aim to answer the questions “How?”, “With what?”, and “Why?” in each topic, emphasizing the design process as a necessity for achieving results by using appropriate technologies and understanding the significance of the developed solution for society. In the sample curriculum for the subject “Design and Technology for Grades 1–9,” the design thinking process is highlighted as a problem-solving method that helps students understand how useful design solutions for people are created, following a sequential workflow (Skola2030, 2019a). In the sample curriculum for the subject, teachers are provided with a methodological comment, where the key steps of the design process are emphasized in the study of each topic (see Fig. 1).

The design thinking process in the subject ‘Design and Technology’ is linked to the students’ ability to work creatively while applying transversal skills in the learning process. Teacher collaboration and the organization of integrated lessons provide the opportunity to identify diverse connections between the creative tasks of different subjects, flexibly involving students’ problem-solving skills, critical thinking, creativity, collaboration, entrepreneurship, and self-directed learning (Briška & Kalēja-Gasparoviča, 2020). In order for students to acquire problem-solving skills through practical activities, teachers need to organize the learning of the design process within each topic.

The authors conclude that mastering the design thinking process in the subject ‘Design and Technology’ is significant for the student’s development, as it allows them to understand the algorithm for creating innovative products. The knowledge and skills gained can be applied in various subjects and fields. The design thinking process model offered by Skola2030 is a methodological tool for teachers’ work.

Methodology

To assess the current situation regarding the implementation of the design thinking process in primary schools while studying the subject “Design and Technology”, a pilot study was conducted. The data collection method was a teacher survey using a questionnaire. The questionnaire consisted of 10 questions. Eight questions allowed the option to choose an answer or provide a custom response, while two questions required descriptive responses from the participants. The study on the implementation of design thinking in primary education was conducted from February 2024 to April 2024. Data processing was performed using IBM SPSS Statistics 29 software, employing the following methods: Mann-Whitney test, Kruskal-Wallis test, Correlation, Kolmogorov-Smirnov test, and Frequency test. The study sample included 30 primary education teachers who teach

the subject ‘Design and Technology’. The questionnaire was published in a Facebook teachers’ group. Teachers who work in primary schools and teach the subject “Design and Technology” were invited to fill out the questionnaire. Teachers from different cities and educational institutions voluntarily filled out the questionnaire.

To process the data in SPSS, a coding table was created. To ensure internal consistency of the questionnaire, a Cronbach’s alpha test was performed. The obtained result ($\alpha = 0.794$) indicates good internal consistency.

In addition to quantitative data analysis using IBM SPSS Statistics 29, open-ended responses were analyzed using qualitative content analysis. All responses were initially carefully reviewed to identify relevance to the design process implementation. An open coding approach was used, and codes were developed according to the steps of the design process. Two independent researchers coded the data separately, and reliability was ensured through discussion and consensus.

This study met ethical research standards. Participation in the survey was voluntary, and informed consent was obtained from all participants before data collection. Respondents were informed of the purpose of the study, the anonymity of their responses, and their right to withdraw from participation at any time without consequence. All data were analyzed in an aggregated manner to ensure confidentiality.

Results and Discussion

The statistical analysis shows that the respondents are women with varying levels of professional experience as teachers. Four respondents work with 1st grade students, 10 with 2nd grade students, and 16 with 3rd grade students. The teachers’ different professional experiences, the grade they work with, as well as their place of residence, provide insight into the trends of implementing the design thinking process in primary schools.

The Kolmogorov-Smirnov test indicates that the data does not follow a normal distribution ($p < 0.05$), so non-parametric tests were used in the data processing.

A Frequency test was conducted to determine the distribution of responses and the mean values (see Tab. 2).

Table 2 Implementation of the Steps of the Design Thinking Process in Grades 1–3

Design thinking process step	Mean	Response distribution		
		Causes difficulty	Depends on the topic	No difficulties
Identifying needs and opportunities	2.00	7	16	7
Search for ideas and choice of solution	1.90	7	13	10
Planning	2.03	11	9	10
Development	1.57	4	9	17
Evaluation	2.00	11	8	11
Testing and improvement	2.07	10	12	8
Implementation	2.23	11	15	4

The response distribution indicates that primary school teachers in the first stage of education face difficulties in implementing specific design steps in the subject 'Design and Technology' depending on the topic that needs to be addressed in the learning process. This means that teachers most often select which design thinking steps to include in the learning process based on the topic. Teachers experience the most difficulty in the steps of 'Implementation' and 'Testing and Improvement', with average values of 2.23 and 2.07, as also indicated by the response distribution. For example, a teacher with 10 years of experience in a school links implementation difficulties to the lack of time in the learning process, which prevents a deeper exploration of the topic: "Often the idea is so extensive that only the prototype model gets tested, and it's not possible to implement the idea fully so that it can be used in reality." A 3rd-grade teacher with three years of experience at school believes: "Primary school students like to work creatively, create practical projects, rather than plan and analyze. Design is the subject where students expect the opportunity to express themselves, work, and demonstrate their skills. Often, the curriculum offered does not seem interesting to them. With students of this age, it is impossible to complete everything required within the class period, planning, development, analysis, evaluation, etc." A 2nd-grade teacher from Riga with 40 years of experience in primary education states: "The path to a finished product is too long. It is not appropriate for this age group, it is time-consuming, very little can be done within the lesson, and interest is lost. A small child needs to work with their hands, to develop practical skills."

It can be concluded that teachers offering the design thinking process in topic acquisition must have highly developed planning and organizational skills. It is important for the teacher to implement a time distribution for the steps to ensure that the process is purposeful and not rushed. Teachers' experiences can be linked to the guidelines provided in the sample curriculum (Skola2030, 2020b). In the subject 'Design and Technology' at the primary school level, it is crucial to get acquainted with materials and learn techniques such as knitting, sewing, crocheting, and others, as this skill set is the primary condition for creating things. The student needs to build their experience by working with their hands. Teachers must remember that the process of exploring materials and techniques should be separated from the design process, which is related to creativity and innovation. The meaningful creation of new things should be connected with a design thinking-based process, so students can apply their previous experience by selecting appropriate materials and processing methods in their individual work development.

A teacher from a city school with three years of teaching experience emphasizes the impact of an inadequate environment on the implementation of the design thinking process: "There is insufficient equipment to search for ideas, and the number of lessons is too small. Sometimes the environment is not suitable for testing and implementing the developed ideas." This teacher's opinion can be linked to findings in theoretical literature, where the importance of a positive environment for a successful design thinking process is highlighted. It is important to ensure the interaction of multiple environmental dimensions, considering the arrangement of space, technical equipment, individual

attitudes, mutual cooperation, and creative methods (Geske & Zizlāne, 2018; Briška & Kalēja-Gasparoviča, 2020). The learning environment is an important aspect of the creative discovery process so that teachers and students can achieve the set goals.

The average score for the 'Planning' step is 2.03, indicating that teachers face difficulties. A 2nd-grade teacher with 40 years of experience from Riga draws attention to the age group and the skills of students: "A student can plan when they have learned the skills and know what they can work with in their work. In 2nd grade, there is still much to teach basic skills and techniques with various materials before asking them to plan something themselves". Another respondent's opinion on implementing the planning step in class: "A young child needs to work with their hands, exercise their fingers, rather than spend half the class time reasoning and talking. Writing skills are also not developed enough to write a plan." A primary school teacher in the first stage must encourage students to become aware of their skills and think about planning, gradually introducing them to the design process (Skola2030, 2019b). It can be concluded that teachers in the primary school stage understand the planning step in design thinking as students writing their own plan independently. It is important to understand that at this age, the teacher should build understanding about planning through different tasks and questions, not necessarily expecting students to independently plan the creative process. Emphasizing the importance of planning and building a deeper understanding in 1st-3rd grade will promote the development of independent planning habits in later grades.

The average score for the 'Evaluation' step is 2.00, indicating that some teachers do not face difficulties in implementing this step, while others encounter challenges when evaluating the design thinking process or the product developed in primary school. Respondents raise the question: "How do you assess a student's work if the child enjoys it a lot, but the work is not of high quality?" It is important for both teachers and students to understand the purpose of evaluation and the criteria beforehand so they know how to achieve the best results. The survey results reveal teachers' views on evaluating work when students have different levels of knowledge and skills: "Evaluation is challenging because each child has their own abilities, within which the work is done." It can be concluded that teachers need to think about task differentiation and individualization. One respondent's opinion was: "Rarely, but it is still challenging to formulate the expected results and determine criteria that are appropriate for the age group."

Evaluating a creative process or product requires clearly defined and understandable criteria to reduce misunderstanding among both teachers and students. Evaluating a creative process is more difficult because its course is unpredictable, and the outcome is not always what was initially planned (Briška & Kalēja-Gasparoviča, 2020; Lucas et al., 2013).

The results of the Mann-Whitney test revealed statistically significant differences in the implementation of the 'Testing and Improvement' step depending on teachers' experience in primary school ($p = 0.043$). This indicates that teachers with 30 or more years of experience in primary school find it more challenging to test and improve the product they have developed compared to younger teachers with 5 to 10 years of experience. It can be concluded that more experienced teachers have a harder time adapting to changes,

as they have worked with traditional methods for many years, focusing on evaluating the final product.

In the data analysis regarding the development of students' skills through the use of design thinking, the Kruskal-Wallis test showed no statistically significant differences based on the class level taught by the teacher ($p > 0.05$). This suggests that teachers, regardless of the class they teach, can develop students' collaboration skills, ability to persist in the face of challenges, and the ability to find alternative solutions to achieve goals while implementing the design thinking process.

The theoretical literature also discusses that design thinking encourages students to take on new challenges, enhances group collaboration, and fosters perseverance and goal-setting (Carroll et al., 2010). The use of design thinking in schools influences the range of experiences and knowledge that fosters confidence in students' opinions and abilities (Dam & Siang, 2017). By developing design thinking in primary education, students are given opportunities for personal growth, helping them to become individuals with a broader perspective in the future.

According to the mean values, respondents' answers about the difficulties in implementing the steps of the design thinking process were analyzed, depending on the location of the school (see Tab.3).

Analyzing the implementation of the steps of the design thinking process in capital city Riga schools, the mean values for the steps 'Identifying needs and opportunities' and 'Testing and improving' are 2.67, while the mean values for the steps 'Idea search and solution selection', 'Planning', and 'Implementation' are 2.33, indicating that their implementation presents difficulties. In city schools, the highest mean value of 2.25 is found for the steps 'Planning' and 'Implementation', while in rural schools, the greatest difficulties arise with the implementation of the 'Implementation' step.

By analyzing the distribution of the mean values, it can be concluded that the most difficult design thinking steps to implement are in Riga schools. One reason for this is that in Riga and city schools, the large number of pupils in the class creates challenges for teachers in organizing a quality design thinking process for the subject matter. Each pupil

Table 3 Implementation of the steps of the design thinking process depending on the location of the school

The Steps of the Design Thinking Process	Mean		
	Capital city	City of national importance	Rural areas
Understanding Needs and Opportunities	2.67	1.92	1.93
Search for Ideas and Choice of Solution	2.33	2.00	1.73
Planning	2.33	2.25	1.80
Development	2.00	1.50	1.53
Evaluation	2.00	1.92	2.07
Testing and Improvement	2.67	2.00	2.00
Implementation	2.33	2.25	2.20

requires an individual approach, which the teacher cannot provide effectively within the time constraints of a lesson. In rural schools, the design process is easier to implement because individual attention can be provided to pupils in the class, whereas difficulties arise if the appropriate environment, design process methodology, and technologies are not provided.

The results of the Kendall correlation show the interrelationship between the steps of the design thinking process (see Tab. 4).

As shown in Table 4, the steps of ‘Search for Ideas and Choice of Solution’ and ‘Planning’ are closely correlated ($r = 0.647$), which suggests that when a teacher faces difficulties in implementing the idea generation and solution awareness stage, the subsequent ‘Planning’ step also presents challenges. It is important for teachers to ensure a dynamic and understandable design process to foster student growth in achieving the set goals. I. Kupča, founder of the art education center *TRĪS KRĀSAS* and co-author of the content development of the new subject “Design and Technologies”, expressed her opinion in an interview with A. Auziņš on the Skola2030 blog that “The initiative and starting point for thinking of a primary school student may not be a problem or need, as in the classical design thinking model. It may be a material or an example seen in the surrounding environment that stimulates and provokes imagination. The most important thing in this process is that within the scope of one task, solutions can be different for each student in the class. In high school, this process is structured and more closely resembles a full design cycle, including research, need formulation, and development” (Auziņš, 2020).

Briška and Kalēja-Gasparoviča (2020) in ‘Design and Technology’ encourage offering students various tools and materials, defining the problem, and allowing them to experiment, make mistakes, and choose the best option. The principle of creating a product with a specific purpose or for a particular character will foster the student’s creativity. Instead of following instructions to complete a task, for example, students could make a necklace for Shrek, the Sun Daughter, or a grandmother, as this introduces a problem situation where the student’s solution must consider the recipient’s personality traits and taste. Students can be encouraged to observe irregularly shaped natural materials (pieces of bark, plant roots, or leaves), allowing their imagination to see silhouettes, textures,

Table 4 Kendall correlation results

Step	1	2	3	4	5	6	7
1	–	–	–	–	–	–	–
2	–	–	.647**	.606**	–	.475**	–
3	–	.647**	–	.470**	–	.513**	–
4	–	.606**	.470**	–	–	–	–
5	–	–	–	–	–	.504**	–
6	–	.475**	.513**	–	.504**	–	–
7	–	–	–	–	–	–	–

1 – Identifying Needs and Opportunities; 2 – Search for Ideas and Choice of Solution; 3 – Planning; 4 – Development; 5 – Evaluation; 6 – Testing and Improvement; 7 – Implementation

human or animal figures, or other images. As a result, they can enhance these observed images with details so that a clear story emerges (Briška & Kalēja-Gasparoviča, 2020).

The steps of 'Planning' and 'Development' are correlated ($r = 0.470$), which means that if students do not have the opportunity to plan the creative process themselves, the teacher must become involved in the development stage and provide guidance on the tasks to be completed. 'Development' and 'Idea Generation and Solution Selection' ($r = 0.606$) are correlated, indicating that product development is not possible without an idea or problem solution, so it is important to set a goal and strive to achieve it. 'Testing and Improvement' correlate with the steps of 'Idea Generation and Solution Selection' ($r = 0.475$), 'Planning' ($r = 0.513$), and 'Evaluation' ($r = 0.504$), which means that testing the developed work and listening to other opinions is an important stage in order to return to previous steps and make necessary improvements. It can be concluded that the steps of the design thinking process are interrelated, so if the teacher has difficulty implementing even one step, the entire design thinking process is disrupted. The interaction between the steps of the design thinking process is an aspect that enables achieving a positive result in developing a needed problem solution or product. The successful integration of design thinking steps into the learning process provides the student with a multifaceted view of topic mastery in primary school, which is also emphasized in the survey responses.

In the teacher survey, the participants were asked for their opinion on the importance of the design thinking process and why it is essential to implement the design steps in primary school. Some of the responses were as follows:

- All the steps are very necessary because if any one is missing, the design process will not be complete and may not yield the desired results.
- It helps to better understand the topic being studied.
- It encourages looking at the task from a broader perspective, thinking more, getting involved, and ensures that students' work is their own creation and ideas, not modeled after a template.
- It fosters a deeper understanding of the task at hand.
- It develops various skills that can be used in other situations.
- It helps in developing students' thinking.
- In some topics, these steps can be used to create a high-quality, useful, and tested product.

It can be concluded that primary school teachers' insights on implementing the design thinking process in the subject 'Design and Technology' differs. This is determined by the teachers' work experience, understanding of the design thinking process, ability to choose appropriate teaching organizational forms and methods that stimulate students' interest and achievement of the set learning outcomes. A significant aspect that hinders the implementation of the design process in the learning process is an unsuitable environment, poor technical equipment, and the lack of materials, which restricts teachers' creativity.

In the survey, respondents noted the acquisition of various skills as a positive result of the design thinking process, which promotes the student's personal growth. To clarify teachers' opinions on which skills are developed and improved, seven skills were offered: being flexible, showing courage, accepting challenges, the ability to take risks, collaboration, the ability to find alternative ways to achieve a goal, and the ability to not give up in the face of difficulties. By analyzing the results, the number of cases was determined. After compiling the survey data, it can be concluded that teachers of the subject 'Design and Technology' for grades 1–3 have identified three main skills developed in the design thinking process while developing an idea or product. In six cases, teachers believe that students learn to find alternative ways to achieve the set goal, in seven cases, that collaboration is an important skill that is enhanced during the creative process, and in the most cases, 10 cases, teachers responded that students develop the ability to not give up in the face of difficulties. It can be concluded that students, by mastering the design thinking process, learn to see multiple possible solutions to a problem, develop a habit of collaborating with their peers, and communicating with professionals from different fields. When developing a new product, students follow the design steps, which purposefully guide them to the result, not allowing them to give up if difficulties arise. Similar conclusions were made by researcher Veita (2019), who found that in the design process, students acquire intellectual, technological, and collaborative skills while exploring problems and seeking creative approaches to idea generation and implementation.

In three cases, teachers noted that students' thinking becomes more flexible, which means that students have the ability to adapt to different unknown situations and find solutions in difficult moments. Teachers least often highlighted the skills of accepting challenges, showing courage, and the ability to take risks, which suggests that students in grades 1–3 are still reluctant to take on a leadership role in decision-making. The conclusion is that teachers need to offer tasks within the design thinking process that allow students to take risks and make mistakes. It is important for the teacher to emphasize that making mistakes in the learning process is normal because there is an opportunity to correct them.

Conclusions

Implementing the design process allows for the structured flow of the creative process, giving students an understanding of the essence of design product development. The results of each stage are crucial for the successful progress of the process, making it important for the teacher to take responsibility for the chosen forms of teaching organization, teaching methods, evaluation techniques, and the selection of an appropriate learning environment.

The survey results showed that the implementation of the design thinking process heavily relies on the teacher's knowledge and experience, a creative environment, safe working equipment, and age-appropriate teaching methods. If any of these aspects are

not carefully considered and planned, teachers most often encounter difficulties and negative emotions.

The development of design thinking in primary school is crucial for the subject 'Design and Technology', thus creating an appropriate learning environment, opportunities to learn outside of school, and fostering teacher development in design thinking are essential. These are relevant issues in the education field, and therefore, research and solution-seeking should be carried out by both teachers and educational institution leaders. Design thinking in schools can be promoted by a teacher who understands the specific nature of this way of thinking and its importance in student development.

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COOPERATION OF SOCIAL PEDAGOGUE WITH PARENTS IN THE SOCIALIZATION PROCESS OF CHILDREN IN A PRESCHOOL EDUCATIONAL INSTITUTION

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ABSTRACT

This publication highlights the necessity and relevance of collaboration between social educators, preschool teachers, and parents in ensuring a successful child upbringing and socialization process. The article is relevant due to the need for a specialist support team member a social pedagogue already in preschool institutions, as the number of children facing socialization difficulties, behavioral problems, and the need for professional support in acquiring positive behavioral habits, as well as in the learning process, has increased in pedagogical reality. In the context of the pedagogical issues to be addressed, conscious and purposeful collaboration is essential, as it ensures the formation of positive educational relationships between children, parents, and teachers, which is a significant prerequisite for children's positive development and successful socialization. The aim of the article is to determine the professional opportunities and competence of the social pedagogue in providing pedagogical support, promoting parental awareness and understanding of the impact of the social environment and the organization of the pedagogical process in child upbringing in preschool education. Based on the analysis of parents' survey data, the level of parental awareness regarding their children's socio-emotional development and the formation of individual social experiences has been identified. The survey data confirms that the enhancement of parents' pedagogical competence is significantly influenced by their individual interest, motivation for collaboration with educational professionals, and their ability to reflect on the developmental possibilities in the context of the child's socialization, not only within the purposefully organized educational environment with the support of the pedagogue and teachers' professional expertise but also within the family's educational relationships.

Keywords: *child, cooperation, education, socialization, social pedagogue, support, parents, preschool*

Introduction

The early stage of preschool education is a restless period for a child when the first interactions with other children in a group and with teachers begin. This can often be

an anxiety-filled experience for a child who has difficulties with socialization. Special attention is needed for children with behavioral and learning difficulties, who tend to cross boundaries. Therefore, it is necessary to increase the availability of social pedagogues and other support specialists already in preschool institutions, in order to address and prevent these issues early before the child starts school.

One of the most important tasks of the social pedagogue in the child's socialization process is considered to be their competence in matters of child personality development. The key is to identify unmet needs and changes in behavior in a timely manner. Socialization for preschool-aged children largely takes place within the institution. Therefore, the preschool institution is the natural environment where the social pedagogue collaborates with the child, the parents, and the teacher. Parents need to be informed about the educational process and the child's social life in preschool, which depends on successful communication with teachers.

By observing changes in a child's behavior and performance related to adverse socialization, the social pedagogue assesses and begins to reduce social and emotional difficulties, in order to promptly initiate professional support and develop individualized approaches to social pedagogical support for socialization.

A favorable microenvironment plays a crucial role. A child's stable emotional, psychological, and health condition is greatly influenced by the positive environment and social climate of the preschool institution. The German-born American psychologist, founder of social psychology, and researcher of life space, Kurt Lewin (Lewin, 1953), notes: "The social climate in which a child lives is just as important for their development as the air they breathe. The group to which the child belongs is the soil in which they will grow. The child's attitude toward the group and their status within it are the most important factors ensuring the child's basic need for safety" (Lewin, 1953, p.125).

For a child to socially adapt to a new environment, the school must provide a learning environment that is suitable and appropriate for the child's needs (Liegieniece, 1999).

Preschool education is the first level of education in Latvia's educational system, where a child's personality development, socialization, and reinforcement of societal values take place. Therefore, the preschool period is the most important stage and deserves the greatest investment from society.

The aim of this article is to determine the professional opportunities of the social pedagogue in implementing a support model, promoting parental awareness and understanding of the influence of the social environment and the organization of the pedagogical process in early education children in preschool institutions.

Research questions proposed for the study:

1. What is the parents' awareness of their child's social-emotional development and the formation of individual social experience at preschool education institution "X"?
2. What kind of social pedagogical preventive measures and pedagogical-psychological prerequisites promote the child's socialization in a preschool institution?

The Competence of a Social Pedagogue and Cooperation in Promoting Children's Socialization

The specific work of a social pedagogue in a preschool educational institution is to identify, assess, and resolve the social and emotional difficulties that children encounter when they begin attending preschool, where the adaptation and socialization process starts.

A social pedagogue professionally helps children change their behavior in conflict situations by creating positive, solution-oriented communication. They help children feel safe and protected in preschool. Therefore, the social pedagogue must be familiar with the Child Rights Protection Law to explain rights and responsibilities to both children and parents and ensure that these are respected. Child abuse remains a pressing issue today, which is why increased attention must be paid to educating about child safety, in cooperation with child protection specialists. Preventive work with parents must include a support model to address difficulties faced by children and families. The role of the social pedagogue in preschool as a support provider for children and their parents is crucial, as receiving support in problematic situations should be natural and self-evident.

By understanding the preschool system, the social pedagogue can objectively assess situations and begin resolving problems early. It is important to cooperate as a united team with the administration, teachers, and parents, establishing common and appropriate expectations for all involved in a problematic situation. If specialists like psychologists and social pedagogues in preschool help children with learning and socialization difficulties develop problem-solving skills early on and provide timely assistance and preventive measures, children will have a better chance of successfully integrating into the learning process and society in the future.

For the socialization and learning process to be successful, the role of the social pedagogue in preschool is to support children facing difficulties, inform parents in a timely manner, and develop a support system. Parents are expected to show interest, cooperate, and take responsibility for the identified difficulties of their child, working together with specialists to find solutions. Often, due to time constraints and the rush of modern life, the parent-child relationship is neglected. Every child needs special time for conversation and to be heard daily. Even young children have much to share about their daily experiences. Parents must understand that difficulties in socialization should be addressed already in preschool, as the strong foundation laid by parents will be the most reliable when the child starts school.

Social pedagogues also observe children who may have learning disabilities but are talented in other areas, and through their abilities and interests, educational improvements can be achieved – they just need support. Parents should be encouraged to change their attitudes – to evaluate their child's difficulties and new needs, understand what is necessary for development, and become more deeply involved in the learning process. This means encouraging children daily to study, read, write, analyze, draw, play music, do sports, explore new things, compare, evaluate, and develop self-criticism. These activities form a solid basis for a child's development and socialization.

Sarmite Tubele (2021) in her study *Prevention of Learning Disabilities in Preschool Children* emphasizes that Early intervention is very important to manage children's unsuccessful learning and loss of self-confidence, as the number of children with mixed developmental disabilities and later, at school age, learning disabilities is increasing. Some preschool children may have multiple developmental disabilities, which create a whole range of different problems that cannot be solved on their own. If they do not receive help, these children will be diagnosed with long-term learning disabilities when they reach school age, and this can cause several difficulties for students (Tubele, 2021).

In the *Social Work Dictionary*, the competence of a social pedagogue is defined as a combination of knowledge, skills, attitudes, and values aimed at reducing or eliminating difficulties in a person's behavior caused by socialization disorders (*Social Work Dictionary*, 2023).

The social pedagogue facilitates effective cooperation with the preschool's administration, psychologist, speech therapist, nurse, teachers, teaching assistants, and parents, adhering to principles of teamwork. In a preschool educational institution, the support team typically includes: a social pedagogue, psychologist, institution head, speech therapist or special education teacher, medical worker, group teacher, and parent. The 2023 methodological recommendations by the National Centre for Education on organizing the work of the support team in educational institutions provide descriptions of the competence of each specialist involved in support. The team composition may vary in each institution, depending on the situation, needs, and resources. (See Figure 1).

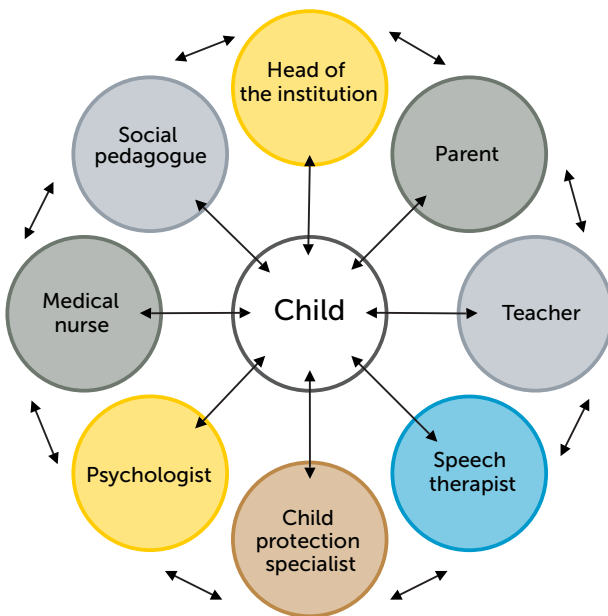


Figure 1 Cooperation of the Support Team in an Educational Institution
(Created by the author, 2025)

Development and Socialization of Preschool-Age Children in the Educational Environment

A preschool-aged child is curious and development-oriented. Rapid intellectual development occurs, with growth in thinking and imagination. The child's interest is directed toward understanding human relationships, objects, and phenomena, thereby also developing cognitive processes. The child learns to control attention, which supports the development of intentional attention – one of the most important prerequisites for a successful start to school. Intentional attention is promoted through activities like construction and rule-based games. Role-playing becomes the leading form of activity, and children begin to engage in such play during preschool years. Through this, they explore their individuality and test social roles they will play in the future.

Through active play, the child exercises the body, develops various skills, and expresses emotions. Game rules help the child become self-aware, evaluate others, and compare themselves to peers. They experience victories and losses, learning skills like leadership and compromise. A short attention span is natural at this age. Children are attracted only to engaging objects tied to emotional experiences. They remain focused only as long as they are interested. The teacher's task is to encourage this interest and curiosity (Methodological Recommendations for Implementing the Preschool Curriculum, 2016).

In the first six years of life, children undergo rapid physical, cognitive, and socio-emotional development. This is described in the book *Developmental Psychology* by Sebre & Miltuze (2022), which integrates both classical and modern development theories from Latvia and the world. The book presents research findings and practical examples, including solutions for various developmental difficulties.

The renowned Swiss psychologist and philosopher Jean Piaget (1945) developed stages of intellectual development. According to him, children are not “little adults” who simply know less but are in an active process of cognitive development. In the preoperational stage (ages 2 -7), children's thinking is characterized by animism, lack of understanding of conservation, decentration, and egocentrism. These characteristics diminish toward the end of this stage. However, modern studies show that some skills are acquired slightly earlier, especially when research involves materials familiar from everyday life.

A child's socio-emotional development forms through close interaction with the social environment primarily the family, which should be supportive and empathetic to help develop positive self-esteem, behavior, and secure attachment. Secondly, a child's biological temperament plays a role, which can be amplified or suppressed through parenting. Sebre & Miltuze (2022) emphasize that emotional bonding begins at birth and continues through the formation of attachments in the early years. Secure attachment is fostered by the following parental behaviors: sensitivity, support and acceptance, attunement, shared activities, and attentiveness. Insecure attachment forms when parental responses are harsh or inconsistent marked by avoidance, disorganization, violence, or neglect. This negatively affects the child, denying their personality, ignoring needs, and leading to biased assessments. Later in life, attachment influences self-perception, emotional

self-regulation, empathy, and the ability to form relationships. Supportive relationships with parents and close caregivers are crucial in developing positive self-esteem, which contributes to success in life (Sebre & Miltuze, 2022).

Children with learning and socialization difficulties often need more time to concentrate and complete tasks. Teachers should be patient, avoid criticism if a child cannot complete tasks on time, refrain from doing tasks for the child, and instead adapt tasks and the environment to fit the child's interests and personality traits.

According to the 2016 methodological guidelines by the *State Education Content Centre* on preschool education implementation, adaptation and socialization in a new environment are significant challenges for young children, as such changes require psychological and physical readiness. Adaptation means adjusting to a new situation, expectations, and specific conditions, and it is stressful because it is unfamiliar to the child. Although the environment may be fully suited to the child's needs, it can still take several weeks or even months to fully adapt to new conditions, rules, and surroundings.

During adaptation, the child must become familiar with the preschool environment -classrooms, daily schedules, behavioral norms, and rules related to group materials. They must also get to know the teacher and learn their name. Each child is different, with unique experiences and knowledge, so the adaptation period and its duration vary. Still, the beginning of the pedagogical process is emotionally intense for every child, whether they show it or not. Initially, every child experiences emotional discomfort. Even with skillful teachers and parental support, adaptation can be difficult.

Adaptation challenges may manifest in various ways: frequent illness, aggression, neuroses, tearfulness, apathy, feelings of guilt or shame, sleep or eating disorders, frequent accidents, rule-breaking, aimless hyperactivity, indecision, concentration difficulties, poor memory retention, self-blame or blaming others, etc. If these symptoms persist for more than 1.5 to 2 months, it is advisable to seek professional help to determine the causes.

Teachers must create a supportive, developmentally appropriate learning environment that fosters the child's well-being and sense of belonging. The teacher ensures the child feels welcomed, treats them kindly, engages in conversation, gets to know them, offers support, and gives praise for achievements. Collaboration with parents is also vital – teachers provide meaningful information about the child's progress and daily life in preschool.

The learning environment must be physically safe and easy to supervise, and the space should be functional – equipped with toys and materials used daily, with enough room for movement and creative activity. The setup must match the children's age and learning content. All materials and items intended for children should be easily accessible. To support individual work, it's recommended to create activity centers within the room for different types of play and learning (Methodological Recommendations for Preschool Curriculum, 2016).

The Child's Socialization Experience

The primary and most important socialization experience for a child is acquired in the family. It serves as a stable foundation – a strong core formed by the family itself. Relationships with parents, siblings, and other relatives provide the child with initial experiences and form the basic behavioral models needed to adapt to society in the future.

From the first days of life, a child is surrounded by more and more people and gradually becomes involved in social interaction, forming relationships and gaining social experience that becomes an integral part of life. In order to prepare the child for preschool, school, and life in general, it is important to highlight the key process of socialization. This concept has many definitions that have evolved over time, though its essence remains the same.

“Socialization is the process in which an individual acquires knowledge, behavior patterns, social norms and values, and emotions necessary for successful functioning in the existing society” (Pļaveniece, Škuškovnika, 2002, p. 26).

In the *Dictionary of Social Work* (2023), socialization is described as a continuous, complex, and multifaceted lifelong process in which a person learns and internalizes the knowledge, skills, values, behavioral norms, and social roles accepted in society.

Humans are inherently social beings, and socialization first occurs within the family, then in preschool, school, and other environments where the child is present. This essential process is influenced by both the micro and macro environment immediate or distant society, mass media, communication tools, and, of course, historical family values and ethical norms.

The professional activity of a social pedagogue is closely connected to the socialization of children and youth. The most intense period of socialization occurs in childhood, and within this process, the social context of development is extremely important. Adverse social conditions can lead to antisocial behavior, which requires social correction or resocialization.

The most important institution of socialization for a child is the family, which changes and develops along with the child and significantly influences their future quality of life.

The next most important socialization experience for the child comes from the preschool educational institution. This microenvironment and social context influence the child's personality development, as the child gains social experience, interacts with groupmates and teachers, and participates in activities and social events that promote integration into society.

Today, an important socialization agent for children is the mass media. Children are already accustomed to television, the internet, and social media. Most families own smart devices, computers, and phones. Homes are equipped with multiple remotes, passwords, and security systems. Surveillance cameras are common in public places, often unnoticed. The world's largest social network – the Internet is virtually everywhere. Today's child already understands that life without the internet halts, as people cannot carry

out their daily routines. Seeing family members, teachers, and others using the internet, children understand its significance and try to imitate it, learning to use the web and media from an early age.

For example, Raisingchildren.net.au (2025) offers videos, articles, and apps for raising children developed by Australian experts. How children see TV, social media videos, games and movies? Scary visual images of monsters, nasty animals or horrible faces can stay in preschoolers' minds for a long time. This can happen no matter what else is going on in the story or how likeable the characters are.

Studies show that children become dependent on this powerful socializing force. The reason often lies in the home environment, where smart devices may already have become "electronic family friends." Parents should monitor media usage early on to prevent children from becoming drawn to desocializing content.

Also important is the parents' own childhood experience and how it influences the way they raise their children. Traditional authoritarian parenting models based on instilling fear or shame do not foster the development of a well-balanced personality. Parents should reflect on how they were raised themselves and whether they want their children raised the same way.

Swedish professor of psychiatry Johan Cullberg (2001), with extensive scientific experience, writes in his book *Dynamic Psychiatry* that a person always carries their childhood experiences with them. He will always respond, to varying degrees, to symbolic or actual provocations that remind him of early anxiety-filled situations (Kulbergs, 2001).

Research Methodology

Theoretical research methods: literature analysis, document examination, and data analysis. Empirical research methods: anonymous parent survey; analysis and identification of data on preschool children with difficulties. In the quantitative part of the study, the anonymity of all respondents and the voluntariness of participation were ensured. The principles of research ethics were observed during data processing. Respondents were informed about the purpose of the survey, informed consent was obtained, and the anonymity of the provided information was guaranteed. At the beginning of the questionnaire, parents were given the opportunity to familiarize themselves with information about the research objectives, data usage, and the fact that the survey was anonymous. The researcher's contact information was also provided. The results of the survey were used only in an aggregated form. Research base: Preschool educational institution "X". Research participants: 176 parents of children aged 3 to 7 years. A data summary of 263 children aged 2 to 7 years, identifying those with observed learning and socialization difficulties. Data and results were compiled over three academic years, from 2023 to 2025, focusing on preschool-aged children observed to have learning and socialization difficulties at preschool education institution "X," where the author of the doctoral thesis works as a social pedagogue. All children's data were anonymized. In Latvia, according to

Article 5(5¹) of the Children's Rights Protection Law (1998), a social pedagogue working with children must have specialized knowledge in the field of children's rights protection. Therefore, the social pedagogue is considered competent in assessing children's rights and is able to objectively evaluate a child's learning and socialization difficulties while ensuring the child's rights and access to necessary support specialists, as outlined in Article 11(1) of the same law.

Children's rights to education and creativity are safeguarded, stating that: "The state ensures equal rights and opportunities for all children to acquire an education in accordance with their abilities. The state and local governments ensure the evaluation of special needs for all children upon starting compulsory education and provide appropriate individual pedagogical and psychological support measures in state, municipal, and private educational institutions." (*Cabinet of Ministers Regulation No. 453, Methodology for Assessing the Special Needs of Learners in Preschool Educational Institutions, 2021*). The regulation specifies that to assess the special needs of children who have reached the age of five, teachers must use the Special Needs Evaluation Form (Cabinet of Ministers Regulation No. 453, 2021). This form indicates whether a conclusion from the educational institution's support specialist is required, and if so, it is provided in accordance with the procedure established by the Cabinet of Ministers Regulation No. 556 (19 November 2019) "Requirements for General Education Institutions to Admit Students with Special Needs." The author of the doctoral thesis, employed as a social pedagogue at preschool institution "X," conducted a data analysis of children aged 2 to 7 with observed difficulties between 2023 and 2025. The children's data were anonymized, classified, and presented in tables and diagrams. To determine how satisfied parents are with their child's socialization in the preschool institution and whether the child's needs are being met and their education is successful, an anonymous parent survey was conducted at preschool education institution "X." A total of 176 parents of children aged 3 to 7 participated in the survey. With the help of parents, it was determined whether the child's socialization and development in preschool is progressing successfully. Several key questions were identified (see Figures 2, 3, and 4, created by the author from 2023 to 2025).

Research Results

Analysis of the Assessment Results of Children with Difficulties and Special Needs at Preschool Education Institution "X" in Latvia for the 2024/2025 Academic Year. (According to Cabinet of Ministers Regulation No. 453, Methodology for Assessing the Special Needs of Learners in Preschool Educational Institutions (2021)). Quality has been ensured in the document analysis, which includes an honest attitude toward the data and the individuals involved in the study, and the anonymity of the provided information is guaranteed in accordance with personal data protection. A total of 263 learners aged 2 to 7 years were assessed. The number of children identified as having difficulties and needing specialist support is 95. All of these children require daily support from specialists provided by the preschool education institution: 16 children (aged 2 to 4 years)

As a parent, are you satisfied with your child's socialization, development, and achievements in the preschool education institution?

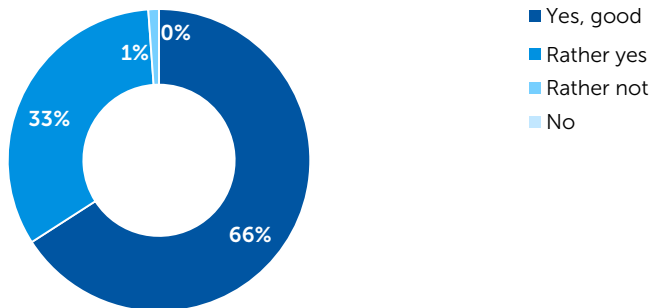


Figure 2 Parents' satisfaction with the child's socialization in preschool

What would your child do if they could both attend and not attend a preschool education institution?

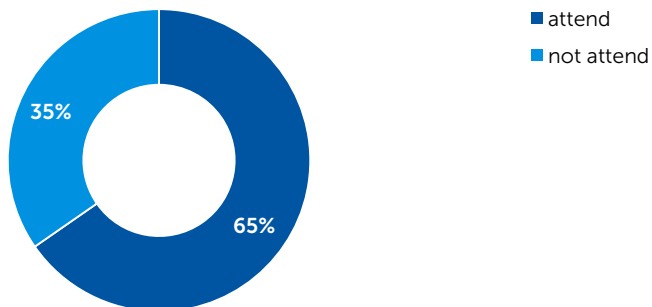


Figure 3 Would (the child) attend or not attend a preschool education institution?

Are you informed about the support staff within and outside the preschool education institution – such as the social pedagogue, speech therapist, medical nurse, psychologist, and other specialists who help resolve problematic situations?

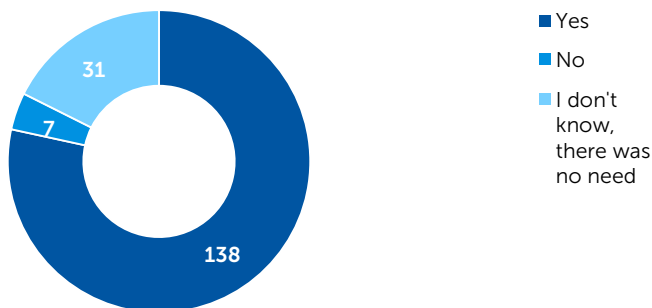


Figure 4 Parents' (176) awareness of support staff in preschool

and 45 children (aged 5 to 7 years) – require a speech therapist 34 children – require a social pedagogue. An additional 9 minority-language children require individual teacher support in various academic areas, as their Latvian language skills and basic competencies do not meet age-appropriate standards, and their use of Latvian in both the learning process and everyday situations is insufficient. 11 children require an individualized approach. External services are required for an additional: 8 children – psychologist, and 9 children – special education teacher, provided by the Inclusive Education Support Department of the Education Authority. 6 children require evaluations

A total of 263 children were assessed at the preschool education institution in the 2024\2025. academic year.

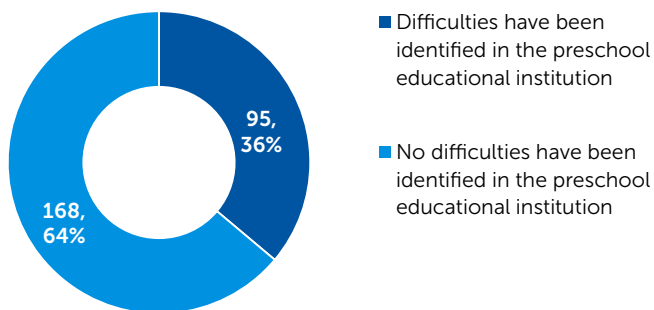


Figure 5 Record of children with difficulties in the preschool education institution, 2024/25

Required daily support specialists for the 2024\2025 academic year.

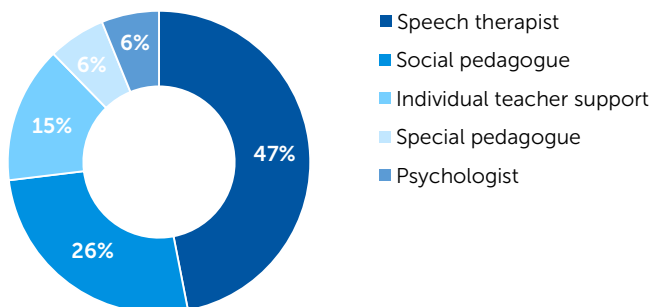


Figure 6 Required support specialists for children with difficulties in preschool, 2024/25

by the Pedagogical Medical Commission. In response, the following were developed: 6 individual education program plans, and 5 individual behaviour correction support plans. (See Figures 5 and 6, created by the author, 2025.)

Discussion

There is no doubt that the professional activity and experience of a school social pedagogue can be applied in a preschool educational institution. However, there is still a lack of appropriate and targeted working methods specifically for preschool-aged children in the development of a support system within the social pedagogue's practice, because:

1. There is a shortage of professionally trained support specialists in preschool educational institutions, and not all preschools and municipalities employ social pedagogues;
2. Social-pedagogical work is not systematized, and the functions of social pedagogues in preschool institutions are not clearly defined. As a result, there are no standardized duties or procedures for handling social cases, which hinders the quality and professionalism of the work;
3. Further research is needed within preschool institutions regarding children facing socialization and other difficulties, in order to address these issues more effectively, taking into account the perspectives of support team specialists.

Conclusions

1. Based on the results of the parent survey, it can be concluded that in the given preschool education institution, 66% of parents are satisfied with their child's socialization and learning process in preschool. 88% receive feedback from teachers, and 93% are informed about their child's achievements. However, it should be noted that 35% of parents indicated that their child would prefer not to attend preschool. This highlights the need for individualized work by the social pedagogue with each child and greater attention to children experiencing difficulties and to dissatisfied parents.
2. The assessment of difficulties and special needs in preschool children aged 2 to 7 indicates that 36% of children require an evaluation by an educational institution's support specialist, as they have learning and socialization difficulties. These children need daily support from specialists such as a speech therapist, social pedagogue, individual teacher support, psychologist, and special education teacher.
3. Regarding collaboration with teachers, the majority of parents over 70% are willing to participate in preschool life, and 78% are informed about the support staff at the institution. This awareness is essential for fostering a positive environment for children's socialization and development.

Summary

The work of support staff and social pedagogues in preschool is very important, because after the results of parent questionnaires and evaluation of children's special needs, children with socialization and learning difficulties are clearly visible. There are children who do not have close enough contact with the teacher and do not have friends, as well as there are children who do not want to go to a preschool education institution, often get sick, have a language barrier, feel bad in a large group. This means that these children need increased attention. The social pedagogue should work more closely with the children and parents of this category in order to find out the reasons for dissatisfaction as soon as possible, solve the situation together and involve additional support specialists.

As a result of positive cooperation with the child's parents and teachers, a favorable attitude towards preschool is formed. The social pedagogue develops recommendations, assistance and support model for educators and parents, working with children with unacceptable behavior, for prevention of negative socialization and resocialization.

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THE ORGANIZATION OF ADULT PRIMARY EDUCATION'S SECOND STAGE IN LATVIA FROM 1918 TO 1940

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ABSTRACT

The study on the organization of adult basic education's second stage in Latvia from 1918 to 1940 highlights significant issues in history and education policy. During the interwar period, several attempts were made to provide accessible and quality education for adults to improve the overall educational level of society and promote socio-economic development. The aim of the study is to examine the organization of adult basic education during this period by analyzing educational institutions, their operating principles, and the political and economic context.

Through analysis of historical documents, legislation, periodicals, and secondary sources, the study identifies that several adult education institutions operated in Latvia during the interwar period, including the Latvian Youth Union Gymnasium, the Evening Secondary School of the Latvian Society for Cultural Promotion, and the State Secondary School for Adults. Despite adult education was recognized as important, it was primarily accessible to civil servants and people with higher incomes. To address this inequality, the Workers' Secondary School Association's Riga Gymnasium was established in 1927, offering evening classes at low costs. Following the 1934 coup, during the authoritarian regime, evening schools were strengthened in legislation, but no specific requirements for adult education were introduced. The findings offer historical insight into present-day educational challenges, especially the diminishing options for evening in-person format adult education in Latvia.

Keywords: *Adult education, Evening schools, Historical development of adult education, Second stage education, Supplementary school*

Introduction

Adult education is a key factor in promoting sustainable social development and inclusion, but its organization and accessibility have varied widely over time. In Latvia, the policy and practice of adult education have developed under various socio-political contexts. Of particular significance is the interwar period (1918–1940), which marked the formation of

Latvia as an independent state, the structuring of its educational system, and society's efforts to foster an educated nation (Butulis & Zunda, 2015; Apine, Balevica, & Bērziņš, 2003).

During the interwar years, several initiatives were undertaken to provide adults with access to basic education, recognizing its importance not only for individual growth but also for long-term national development. Educational institutions such as the Latvian Youth Union Gymnasium, the Evening Secondary School of the Latvian Society for the Promotion of Culture, and the State Secondary School for Adults reflect early attempts to create accessible and high-quality educational opportunities for adults. However, access to these opportunities was often unequal and typically reserved for civil servants or those with sufficient financial means. In response, the Riga Gymnasium of the Workers' Secondary School Society was established in 1927 to offer working-class adults the chance to acquire education in the evenings at an affordable cost.

After the authoritarian coup in 1934, evening schools were formally legitimized; however, no specific standards or requirements were developed for adult education. This situation highlights long-standing issues in the institutionalization of adult education in Latvia – frequently unstructured and lacking long-term strategic planning. These challenges remain relevant today. In contemporary Latvia, access to basic education for adults in evening (part-time) formats is limited. Between 2017 and 2020, significant changes in legislation led to the elimination of evening (shift) schools as a distinct school type (Orupe, 2017), drastically reducing opportunities for adults to study in person during the evening. For example, as of 2024, it is not possible to obtain basic education in an in-person evening format in Riga.

Given these modern challenges, it is essential to examine how adult education was historically organized – particularly during the formative years of Latvia's statehood. The aim of this study is to analyze how formal basic education for adults aged 18 and over was organized in Latvia between 1918 and 1940. The analysis draws on historical documents, laws, periodicals, and secondary sources, highlighting the founding principles, operation, and socio-economic significance of relevant educational institutions. The findings of this study not only illuminate past practices but also offer valuable insights for contemporary educational policy-making.

Socio-Political Context of Latvia from 1918 to 1940

The period between 1918 and 1940 was one of significant transformation and dynamism in Latvia's history. It marked the country's emergence as an independent state and the formation of its socio-political structures, shaped by both internal reforms and external diplomatic challenges.

Latvia's independence was proclaimed on 18 November 1918, a milestone following centuries of foreign domination by Sweden, Poland, and the Russian Empire. For the first time in history, all Latvian-inhabited regions were unified under one national state. However, this unity also revealed considerable regional, ethnic, social, and religious diversity within the newly established republic (Butulis & Zunda, 2015).

According to *Likumdevēju darbības vēsture* [History of legislative activity] by *Latvijas Republikas Saeima* [Parliament of the Republic of Latvia], (2024), the historical period from 1918 to 1940 can be divided into two distinct phases: the parliamentary republic era (1918–1934) and the authoritarian regime (1934–1940). Initially, the People’s Council, formed on 17 November 1918 by eight Latvian democratic political parties and a representative of the Latgale Provisional Land Council, served as the country’s first legislative body. Due to ongoing political instability, general elections were not immediately feasible. This initial phase was marked by significant social unrest, food shortages, and Bolshevik military aggression, culminating in the establishment of the short-lived Latvian Socialist Soviet Republic and the subsequent War of Independence (1918–1920). The first democratically elected legislative body, the Constitutional Assembly (*Satversmes sapulce*), held its elections on 17–18 April 1920. With a voter turnout of 84.9% (677,084 eligible voters), 150 deputies, including five women, were elected. The Assembly drafted the Constitution (*Satversme*), which on 26 January 1921, Latvia and Estonia were granted *de jure* recognition by the Supreme Council of the Allied Powers, followed by diplomatic recognition from Finland, Poland, and many other nations. Ultimately, 42 countries recognized Latvia during the interwar period, with the United States being the last major power to do so in 1922 (Butulis & Zunda, 2015).

Despite its growing international legitimacy, Latvia faced considerable domestic challenges. Before World War I, Latvia had been one of the most industrially developed peripheral regions of the Russian Empire. In the 1920s and 1930s, however, the newly independent state shifted toward a self-sufficient economy focused on goods produced primarily for domestic use. Latvian industry was characterized by a diverse range of products, including the internationally acclaimed Minox miniature camera and locally manufactured sports aircraft. In the field of education, Latvia boasted a high proportion of university students relative to its population, ranking second in Europe in terms of student enrollment in higher education (Apine, Baleviča, & Bērziņš, 2003).

A major turning point occurred on the night of 15 to 16 May 1934, when Prime Minister Kārlis Ulmanis led a coup d’état, dissolving the parliament and establishing an authoritarian regime. Historians and scholars continue to debate this period: while it was characterized by relative economic growth and national consolidation, it also involved political repression, the suppression of opposition parties, and censorship of the press.

This chapter concludes with the dramatic shift in Latvia’s political fate in June 1940, when the Soviet Union occupied the country, effectively ending its independence and ushering in a new era of political and social transformation.

Legislative Foundations and Policy Development of Adult Basic Education in Latvia (1918–1940)

Education is a foundational instrument for the development of knowledge, skills, culture, and personal growth. It represents a structured effort to enhance individual capacities, and adult education constitutes an integral part of this lifelong process.

Although the term “adult education” emerged only in the 18th century, the significance of educating adults was recognized much earlier – already discussed by philosophers in ancient Greece. In the territory of Latvia, adult education initially developed alongside the Christianization process, as literacy became essential for reading prayers and scriptures. However, the formal structure of adult basic education in Latvia can be clearly traced to the post-1918 period, following the proclamation of the independent Republic of Latvia.

For the first time in Latvian history, a systematic and consistent national education policy was implemented under the democratic framework of the newly independent republic. This policy was marked by a commitment to democratization and reflected the state’s genuine interest in raising the educational level of its citizens. The development of the school system during this period can be divided into two phases: the parliamentary period (1918–1934) and the authoritarian regime (1934–1940), each with its own distinct characteristics and commonalities (Apine, Balevica, Bērziņš, 2003).

A key milestone was the adoption of the Law on Educational Institutions of Latvia on 8 December 1919, which introduced compulsory education for children between the ages of 7 and 16. This included:

- a) Home education or pre-school (ages 7–8);
- b) Primary school (ages 9–14); and
- c) Supplementary school (ages 15–16).

Education was free of charge, and primary education was structured in two levels – four years in the first stage and two in the second. While the law did not directly mention adult education, it provided a foundation for it. Article 50 specified that supplementary schools should be established by the government and local authorities in the form of evening classes, Sunday schools, or revision courses, with a minimum of 180 instructional hours annually (Law on Educational Institutions of Latvia, 1919).

The restructuring of the education system was briefly interrupted by the invasion of the Red Army. On 16 January 1920, a decree “On Educational and Upbringing Institutions of Latvia” was issued under Soviet administration, introducing the concept of a unified “labour school.” Following the expulsion of the Bolsheviks, the provisional Latvian government resumed work on the national education system, reaffirming the framework of the 1919 law. However, the new system faced serious challenges, including a lack of facilities, teaching materials, and qualified educators. In the first years of independence, secondary schools (gymnasiums) adapted flexibly to bridge the existing disparities in educational levels. By 1928, the number of secondary school graduates had nearly doubled, leading to the emergence of a significant class of unemployed intellectuals. In response, from 1925 onwards, secondary schools were classified into two types – Realschulen and Gymnasien – to manage the issue (Apine, Balevica, Bērziņš, 2003).

Following the authoritarian takeover on 15 May 1934, significant changes were introduced to the Latvian education system. On 27 July 1934, the Law on National Education was adopted, marking the first legal act to explicitly mention evening schools. According to Article 39, the state and municipalities were authorized to establish free evening

elementary schools for individuals aged 16 and above who had not completed basic education, provided that at least 30 applicants registered. Article 44 allowed supplementary schools to operate independently or be replaced by evening schools and various courses. Notably, the law did not impose additional specific requirements on adult basic or secondary education, regulating these forms of education under the same rules as general secondary schools (Likums par tautas izglītību [The Law on Public Education], 1934).

Within the framework of this law, private educational institutions were also legally defined and regulated. Article 103 considered a private educational institution as any establishment where children of school age from various families were educated and raised together, alongside the education of adults, provided the total number of students exceeded nine. These institutions could be organized and maintained by associations, unions, other legal entities, or private individuals. Furthermore, Articles 111 to 121 specified the organization of general education courses aimed at persons who had exceeded the age of compulsory schooling (Article 118), as well as specialized courses offering vocational or subject-specific education, either alone or combined with general education (Article 119). Various adult schools providing these courses could be established and maintained by the state, municipalities, private individuals, or legal entities (Articles 120–121) (Likums par tautas izglītību [The Law on Public Education], 1934).

An analysis of Latvian periodicals from this time reveals that Latvia not only laid the foundation for formal adult education between 1918 and 1940 but also demonstrated a strong interest in how such education was organized in other European countries. For example, the 1930 issue of *Ārpusskolas izglītība* [Extracurricular education] featured an article titled “*Organizing Free Adult Education in Germany and in Our Country*,” which examined the German model, including evening schools. Similarly, the article *Ārpusskolas izglītība* [Extracurricular Education] in the 1 October 1930 issue of *Signāls* [Signal] discussed Western European workers’ schools and their achievements.

Institutional Emergence and Practice of Adult Formal Education in Interwar Latvia

During the interwar period, alongside legislative developments, the first educational institutions specifically targeting adult learners began to emerge in Latvia. These efforts reflected a growing societal interest in expanding access to formal education beyond childhood and adolescence, particularly in the newly established Republic of Latvia after 1918.

One of the most significant steps in this field was the establishment of supplementary school – evening classes intended for adults who had not obtained basic education. These schools marked the beginning of a formal structure for adult education in Latvia and were often initiated either by municipal authorities or private organizations.

Among one of the first such institutions was the supplementary school of Riga City 16th Primary School, opened in the 1922/1923 academic year. Located in the same building (later known as Friča Brīvzemnieka Primary School), and led initially by F. Ieviņš, this

school provided adults with the opportunity to acquire basic education during evening hours. It became a foundational element in expanding access to education for those unable to attend regular daytime classes due to work obligations. (Friča Brīvēznieka pamatskola, Skolas vēsture [Fričis Brīvēznieks Primary School, School History], n.d.)

In 1932, the institution was renamed Riga City 3rd Evening Primary School and continued to operate throughout the following decade. Despite changes in its physical location, the teaching process remained uninterrupted. This institution is considered a predecessor of the later Riga 14th Evening (Shift) Secondary School, established during the Soviet era, though its roots trace back to the 1920s. (Rīgas 14. vakara (maiņu) vidusskola, Rīgas 14. vakara (maiņu) vidusskolas vēsture, [Riga 14th Evening (Shift) Secondary School, History of Riga 14th Evening (Shift) Secondary School], n.d.)

Other districts of Riga also established supplementary schools with similar functions. For example, Riga City 6th Evening Primary School in Sarkandaugava, located at Allažu Street 4, provided opportunities for adults to gain the education they had previously missed. These schools laid the foundation for a more inclusive education system, demonstrating the commitment of both the state and society to lifelong learning. (Cita Rīga [A Different Riga], n.d.)

According to the 1930 resource, the Rainis un Strādnieku vidusskola [Rainis and Workers' High School, 1930], published in Rosme 3 [01.03.1930, Rosme 3], after completing supplementary or evening primary school, adults seeking further education had several options available to them. While traditional gymnasiums continued to serve younger students, People's High Schools (latv. – *tautas augstskolas*) emerged as an important pathway for adult learners. Although the preparatory courses offered at these schools were not legally equivalent to formal secondary education, their pedagogical results were often impressive. Nevertheless, efforts to achieve legal parity with secondary school graduates initially remained unsuccessful.

As Attis Kēniņš emphasized in his article “Lauku tautasaugstskolas un tautas augstskolu kursi” [Rural Folk High Schools and Folk High School Courses], published in Ārpusskolas Izglītība, No. 2 (01.02.1928), the establishment of folk high schools in the Latvian countryside marked a significant stage in the development of extracurricular education. However, he distinguished clearly between fully developed folk high schools and the more modest “folk high school courses” prevalent at the time.

Many of these courses were short-term lecture series held a few hours a week and lacked the residential and community-building components central to the Danish model of folk high schools. According to Kēniņš, a true rural folk high school required communal living, active engagement, and a transformative educational mission focused on character development and the nurturing of social idealism among the youth.

The curriculum approved in 1927 envisioned around 960 hours of instruction, covering a wide array of subjects such as Latvian language and literature, civics, natural sciences, hygiene, handicrafts, and physical education. Emphasis was placed not only on academic learning but also on the cultivation of moral values, civic responsibility, and practical skills.

In contrast, the three-month folk high school courses organized by the Central Education Union offered around 117 hours of instruction and were designed as transitional educational experiences. Held primarily during evenings and weekends, these courses covered subjects like Latvian history, literature, mathematics, civics, and religion. They also included specialized subjects such as foreign languages and home economics, tailored to the local population's needs. Despite their limited duration, these courses played a key role in promoting self-education and community learning.

Ķēniņš concluded that while the establishment of fully developed rural folk high schools remained a long-term challenge due to resource constraints, the organization of short-term courses was an essential and immediate step in addressing widespread demand for adult education (Ķēniņš, 1928).

Other formal avenues for adult education also emerged during this period. In 1920, the Latvian Youth Union Gymnasium was founded, evolving from the youth organization "Jaunība" [Youth]. Two years later, in 1922, the Evening Secondary School of the Latvian Cultural Promotion Society began operations. The State Secondary School for Adults also functioned during this period, albeit with relatively high tuition fees. These institutions primarily served civil servants – especially those who finished work by 15:00 – though some tuition exemptions were granted.

A notable policy discussion appeared in Valsts Darbinieks [State Employee] (No. 2, 1926), where the need for public servants to enhance their education was stressed. It recommended that mid-level public employees (categories VIII to XIII) be required to hold secondary school diplomas and proposed removing financial barriers to accessing adult evening secondary schools.

A turning point came in 1926, when a group of People's High School students appealed to the poet Rainis for support in establishing a new educational institution. This initiative led to the founding of the Workers' Secondary School Society on 28 July 1927. The Ministry of Education approved its statutes in August, and evening classes began on 16 September 1927 in the building of Riga's 3rd Secondary School on Valdemāra Street. A total of 190 students enrolled, with classes held from 19:00 to 22:00. In 1929, the institution was renamed Rainis Gymnasium. Tuition ranged from 60 to 100 Latvian lats, depending on the grade. This school represents a historically significant example of students themselves initiating a formal secondary institution (Trotīte, 1987).

In the article *Vai vispārējās izglītības vidusskolu ir par daudz?* [Are there too many general secondary schools?] published in *Jēkabpils Vēstnesis* [Jēkabpils Herald], issue 6 (1927), noted that by the 1926–27 academic year, a total of 51 general secondary schools were operating in Latvia, using Latvian as the language of instruction. Among them, three were specifically designated as evening schools for adults.

These institutional developments provided crucial educational opportunities for working adults and reflect a broader national aspiration for personal advancement, civic participation, and social progress through education.

Conclusion

The period between 1918 and 1940 marked a formative era in the development of adult basic education in Latvia, characterized by legal advancements, institutional diversification, and an emerging recognition of adults as legitimate participants in formal education. Following the establishment of the Latvian Republic in 1918, the country undertook determined efforts to expand access to education for all citizens. Compulsory, tuition-free six-grade basic education was implemented, alongside the development of an extensive secondary school network and the opportunity to pursue higher academic education in the Latvian language. The modern second stage of basic education corresponds to the first and second classes of the interwar secondary school system.

Although the 1919 Law on Educational Institutions did not explicitly address adult education, it provided mechanisms such as supplementary schools, evening courses, and Sunday schools that opened pathways for adult learners. The 1934 Law on National Education further institutionalized adult education by allowing the establishment of evening elementary schools for individuals over 16 who had not completed their basic education, if at least 30 applicants were registered. This was the first instance where adult education was clearly and legally supported as part of the national education system.

In addition to formal legal frameworks, a number of educational institutions specifically targeting adults emerged during this period. These included the Latvian Youth Union Gymnasium, the Evening Secondary School of the Latvian Cultural Promotion Society, and most notably, the Rainis Gymnasium, founded in 1927 by the Workers' Secondary School Society. Rainis Gymnasium became the first institution to offer evening secondary education for workers at a reduced fee, with classes held from 19:00 to 22:00 on weekdays. While a few other schools also served adult learners, they were primarily geared toward civil servants and were financially less accessible to the working class.

As an alternative to traditional secondary schools, People's High Schools provided preparatory courses for adults. Although these programs were not officially recognized as equivalent to formal secondary education, their academic rigor often surpassed that of recognized schools. Despite the efforts of learners and educators to secure equal legal status for these schools, such recognition was not achieved during this period.

A comparative glance at the present reveals a notable discrepancy: contemporary Latvia does not offer the second stage of basic education (comparable to interwar secondary school levels I and II) in an evening or part-time in-person format for adults. This gap underscores a potential area for policy development and revitalization of inclusive education strategies for adult learners today.

In conclusion, the interwar period in Latvia laid critical foundations for adult education, demonstrating a forward-looking approach that recognized education as a lifelong and inclusive process. Legal provisions, institutional experiments, and grassroots initiatives together shaped a system that, while not without limitations, served as a model of civic commitment to educational access. Revisiting these historical insights may help inform current educational reforms, particularly in addressing the unmet needs of adult learners in Latvia and beyond.

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BIAS-RELATED ETHICAL CONSIDERATIONS OF GENERATIVE TEXT-TO-IMAGE (TTI) TECHNOLOGY: EDUCATIONAL PERSPECTIVE

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ABSTRACT

Generative text-to-image (TTI) models hold significant potential across various fields. Their widespread recognition stems from their ability to produce high-quality imagery based on textual descriptions. Despite the vast range of possibilities, ethical concerns and risks associated with computer-generated imagery remain a significant point of discussion. While the European Union Artificial Intelligence Act provides a legal framework for the development and use of general-purpose AI systems, including TTI technology, it is essential to assess the potential risks associated with their application in education and vocational training. Applying TTI technology in producing imagery may result in images that reinforce stereotypes, perpetuate social biases, and limit the representation of diverse cultural aesthetics. To analyze and identify the characteristics of such biases and bias-mitigating strategies, this study poses the following research question: 1) What bias-related ethical considerations relevant to educational contexts emerge in using generative text-to-image (TTI) technology? A scoping review was employed as the research method. The Web of Science and Scopus databases were chosen, and after conducting a content analysis of 225 abstracts of open-access articles in English, published between 2019 and 2024, containing the keywords “text-to-image” and “bias”, 24 articles were selected as relevant to the focus of this scoping review. From the analysis of the studies, three main categories emerged: (1) Characterization of bias, (2) Bias-mitigating strategies, and (3) Bias-related ethical considerations within an educational process. These categories were further broken down into more specific bias-related ethical considerations and their descriptions. This research contributes to the field by highlighting bias-related ethical considerations that educational professionals should know before incorporating TTI technology into education and vocational training.

Keywords: *text-to-image (TTI), generative AI, bias, ethical considerations, education, scoping review*

Introduction

While Artificial Intelligence (AI) technologies offer unprecedented capabilities in image generation, less attention is given to the technical aspects of the generation process,

the datasets involved, and the ethical considerations surrounding the creation of such images. According to UNESCO (2024), AI literacy in education encompasses the knowledge, skills, and attitudes necessary as a foundation in an educational environment enriched not only with digital technologies but also with AI solutions. It is emphasized that educational programs should include knowledge about the impact of AI on human life, including the ethical issues it may raise, as well as promote age-appropriate understanding of technical aspects, and improve skills for using AI tools correctly, responsibly, and creatively. All stakeholders involved in the educational process should be aware of the ethical implications of text-to-image technology, including biases. The European Union (EU) AI Act provides a legal framework for the development and deployment of general-purpose AI systems, aligning with the ethical principles outlined in the EU Ethics Guidelines for Trustworthy AI (2019). UNESCO Guidance for generative AI in education and research (2023) discusses the steps and key elements to be examined when seeking to regulate Generative AI (GenAI) based on a human-centered approach – one that ensures ethical, safe, equitable and meaningful use, specifying ethical concerns that need to be examined, including hidden bias and discrimination. Given the rapid evolution and growing complexity of text-to-image (TTI) technology and as it has attracted the attention of non-AI specialists, including educators and learners, it is essential to continuously evaluate the potential risks associated with TTI technology use and its application in educational and vocational training contexts.

Various researchers (Bianchi et al., 2023; Laba, 2024; Putland et al., 2023) have expressed caution regarding the widespread adoption of AI technologies and their impact on society, emphasizing that text-to-image generation amplifies stereotypes and perpetuates biases on a large scale. Due to problematic training data and the opacity of machine learning processes, AI systems inherit and perpetuate biases and ideologies embedded within their design, thereby influencing the diversity of visual representation (Laba, 2024). According to Bianchi et al. (2023), images contain far more dimensions than text, offering seemingly limitless opportunities to embed subtle meanings. Despite architectural variations, all such models have one aspect in common: they are trained on massive amounts of data crawled from the Internet (Naik & Nushi, 2023). As uncurated data-driven systems, GenAI models are vulnerable to social biases, which can lead to the creation of digital content that reinforces harmful stereotypes and perpetuates social inequalities. Such biases may result in the favoritism or marginalization of individuals or groups based on attributes such as ethnicity, gender, sexual orientation, and other factors (Naik & Nushi, 2023; Vartiainen et al., 2024). Research on bias-related ethical considerations of TTI is crucial to better understand the processes by which dominant and potentially harmful discourses are reproduced in AI-generated content, and ultimately to work towards more ethical – and critical – engagement with emerging technologies (Putland et al., 2023). As artificial intelligence becomes increasingly accessible for generating texts and images, educational institutions should be aware of specific bias-related ethical aspects, proactively establishing conditions, criteria, and guidelines to govern TTI use within the learning process.

Focus of the review

Given that this research focuses on bias-related ethical aspects of image generation through TTI models, it is essential to begin with a concise overview of the foundational processes, enabling technologies, and key terminology. According to Momen Tayefeh (2024), generating images from natural language descriptions remains one of the most challenging tasks in deep learning. In recent years, various architectures have been developed to address this problem to produce highly detailed and realistic images based on human-written captions through the design of specialized deep learning models. A typical TTI Generative Adversarial Network (GAN) model consists of two primary components: the generator and the discriminator. The generator creates an image based on a text input, while the discriminator assesses the generated image to determine its authenticity. Through adversarial training, the generator progressively improves its ability to produce increasingly realistic images (Bird et al., 2023). Additionally, visual-linguistic multimodal models such as CLIP (Contrastive Language Image Pretraining), a model that learns visual concepts from natural language supervision, became pivotal in image generation tasks (Mandal et al., 2023).

Although TTI tools offer exciting creative opportunities, their use also raises significant ethical concerns, including issues related to data privacy, the spread of misinformation, and algorithmic bias (Ali et al., 2024). Despite the growing concerns surrounding algorithmic biases, there is a noticeable lack of research on how to facilitate awareness and understanding of those biases among children and youth (Vartiainen et al., 2024). As young people are active participants in digital media, the advancement of new technologies requires an understanding of the creation, processing, and application of visual data. Development in teaching methods tends to progress more slowly than technological advancements, highlighting the need for continuous improvement of teacher competencies. Vartiainen et al. (2023a) reported that a supervised reflection phase is particularly important during the co-creation of digital art with GenAI, especially in addressing ethical issues. Consequently, Vartiainen et al. (2023a) emphasized the importance of future research to further investigate educational approaches that enable critical examination of AI systems, applications, and their broader societal impacts. This scoping review contributes to the field by highlighting bias-related ethical considerations that educational professionals must be aware of before incorporating text-to-image technology into education and vocational training.

Methodology

To examine the ethical considerations related to bias in generative text-to-image technologies, a scoping review was conducted of research articles published between 2019 and 2024 in the Web of Science and Scopus databases. The review focused on publications containing the keywords “text-to-image” and “bias.” According to Peters et al. (2020), the scoping review serves to identify and report the evidence about an area of

inquiry, rather than answer a narrow question. A scoping review is best suited to providing an overview or map of evidence and can be used as a precursor to a systematic review (Munn, 2018) as it retains a degree of flexibility to respond to unanticipated literature themes, research designs, and data collection methods for the sake of an open approach to analysis that may not have otherwise been applied by a more narrow systematic review. The scoping review in this research followed Arksey and O'Malley's (2005) framework, which outlines five key stages: (1) identifying the research question, (2) finding relevant studies, (3) selecting studies, (4) charting the data, and (5) collating, summarizing, and reporting the findings.

To guide the scoping review, the following research question was formulated: From an educational perspective, what bias-related ethical considerations arise in the use of generative text-to-image technology?

Table 1 Article selection

Database and selection criteria		Justification	Number of articles	
Web of Science/ Scopus Database , keywords: "text-to-image", "bias".	Inclusion	Articles published between 2019 and 2024	Web of Science: <i>n</i> = 94 Scopus: <i>n</i> = 131	
		Open access articles		To access and read the entire article
		Articles published in English		To avoid misreading
Exclusion		Articles that did not focus on photo-realistic imagery generated by TTI technology	Duplicates removed: <i>n</i> = 6	
		Articles that primarily addressed the technical aspects of TTI technology such as algorithm development, coding practices, and computational methods	Final selection: <i>n</i> = 24	
		The author's research interest lies in the application of photorealistic imagery within educational settings		
		The author's research focus is on the ethical and educational implications, rather than technical solutions, except for those that identify bias mitigation strategies from the user's perspective		

By applying the inclusion criteria, the search resulted in 225 articles. A qualitative review of all abstracts was performed. Further using the selection process by applying the exclusion criteria and removing the duplicates, 24 articles were selected for this study.

Results

After the selection process, the included articles were organized into a table highlighting key characteristics: the purpose of the study, the field of study, the research methodology, and the specific type of TTI technology utilized. All the articles were analyzed using thematic analysis, as themes were identified to classify the bias-related ethical aspects and bias-mitigating strategies of TTI technology. The selected articles were categorized into three thematic categories. The first group of articles ($n = 16$) focused on identifying and characterizing biases embedded in text-to-image technology from social and cultural perspectives. The second group ($n = 4$) included studies that identified bias-mitigating strategies (from the user perspective) in the context of text-to-image technology. The third group ($n = 4$) consisted of research that explored bias through practical investigations conducted within educational environments. Further, each category was elaborated into more detailed bias-related ethical aspects.

Table 2 Thematic categories of scoping review

Thematic categories		Authors
Characterization of bias	Gender bias, including profession, ethnicity, regional, and cultural dimensions	(Abdollahi et al., 2024; Gorska & Jemielniak, 2023; Wang et al., 2023; Luccioni et al., 2023; Mandal et al., 2023; Naik & Nushi, 2023; Cho et al., 2023)
	Demographic biases (racial, ethnic, gendered, class, and intersectional stereotypes)	(Bianchi et al., 2023) (Basu et al., 2023 ; Hall et al., 2024; Currie et al., 2024) (Zhang et al., 2024) (Mack et al., 2024)
	Geographic representativeness	(Putland et al., 2023)
	Cultural representativeness	(Laba, 2024; Thomson et al., 2024)
	Disability bias	(Bird et al., 2023)
	Dementia bias	
	Media bias	
	Typology of risks, including biases	
	Bias mitigating strategies	(Gusdorff et al., 2024; Sanchez, 2023; Rism-ani et al., 2023; Zhang et al., 2023)
	Exploring bias through practical investigations conducted within educational environments	Vartiainen et al., 2024; Han et al., 2024, Ali et al., 2024; Vartiainen et al., 2023b

Many articles primarily focus on examining specific types of bias, while also addressing strategies for mitigating those biases. The categorization of the literature was based on the primary research focus, distinguishing whether it centers on the bias itself, the mitigation strategies, or bias-related initiatives within educational settings.

Characterization of biases

The majority of research (16) within this scoping review aims to detect and identify the bias within the use of TTI technology. Biases include gender bias, including profession, ethnicity, regional and cultural dimensions; demographic biases including racial, ethnic, gendered, and intersectional stereotypes; geographic representativeness; cultural representativeness; disability bias; dementia bias; media bias. Each of the biases mentioned is further broken down into more specific descriptions.

Demographic bias

The selected articles examined various forms of demographic bias, including racial, ethnic, gender, and intersectional stereotypes. Systematic distortions in the representation of diverse social groups, including those defined by race, ethnicity, gender, socioeconomic status, and intersectional identities, are referred to as demographic biases. For example, the description of certain body features using language alone is limited, for example visualizing skin tone might not be effective relying only on textual description (Zhang et al., 2024).

Gender bias

Gender bias explored in the selected articles encompasses biases related to profession, ethnicity, regional context, and cultural dimensions. Gorska and Jemielniak (2023), through their analysis of AI-generated images depicting professionals, highlight significant disparities and inaccuracies in the representation of gender across various occupations. Numerous scholars (Abdollahi et al., 2024; Gorska & Jemielniak 2023; Wang et al., 2023; Luccioni et al., 2023; Mandal et al., 2023; Naik & Nushi, 2023; Cho et al., 2023) identify gender bias (and various gender-related biases) as one of the most pressing and consequential forms of bias in AI systems.

Medical biases, including disability and dementia bias

A study on the representation of medical students in Australia (Currie et al., 2024) found that AI-generated images disproportionately depicted white men, failing to reflect the diversity within the country's medical student population. According to (Mack et al., 2024) research, AI models frequently produce negative portrayals of individuals with disabilities. Insights from focus groups involving 25 disabled participants highlighted persistent and problematic representations that reinforce widespread societal misconceptions and biases surrounding disability. Similarly, Putland et al., (2023) highlight the issue of bias in AI-generated imagery, particularly concerning health conditions like dementia, and call for a more nuanced and inclusive approach in the development and deployment of generative AI technologies.

Geographical representation

According to Hall et al. (2024), AI-generated images should be representative of the world by capturing the variability of people, objects, and scenes across geographic regions, while also being visually appealing or interesting and consistent with the input text description. CLIPScore – a metric based on the CLIP model, introduced to evaluate the quality of generated images – is highly reliable in assessing the presence of an object, while it is generally unreliable for assessing geographic representation (Hall et al., 2024). To test the geographic representativeness amongst generated imagery Basu et al., (2023) investigated how well the images generated by two popular text-to-image models (DALL-E 2 and Stable Diffusion) reflect surroundings across the world. A user study involving 540 participants from 27 countries (including Latvia) examined the extent to which AI-generated images of common nouns reflect participants' local surroundings. When prompts did not explicitly reference a specific country, participants from 25 of the 27 countries reported that the generated images failed to represent culturally specific or authentic elements of the described objects. This suggests that, for instance, generating an image from a general prompt like 'a forest' is unlikely to reflect unique local nature characteristics unless such details are carefully specified within the textual input or guided by an image reference.

Cultural representation

Cultural representation is framed as a more nuanced concept than geographical representation. When evaluating cultural representativeness, the emphasis is on whether the generated content accurately and fairly reflects diverse global cultures. Zhang et al. (2024) conducted a comprehensive analysis of TTI models' performance in this area, by comparing generated images with authentic images. The study by Zhang et al. (2024) revealed significant biases in distribution and diversity within TTI models, concluding that the overrepresentation of certain countries and the neglect of others likely stem from imbalances in the training data. These biases appear to lead models to favor economically developed countries, thereby further marginalizing underrepresented regions and diminishing their visibility in global cultural narratives. Another issue related to the problem of the quality or structure of a dataset regarding the generated images suggests that the TTI model may encounter challenges when trying to understand and accurately represent country-specific cultural objects. Various models inaccurately generate images of authentic cultural objects. According to Zhang et al. (2024), this challenge may arise from limitations in the semantic understanding of such objects within TTI models due to insufficient training data representing specific cultural items or the models' tendency to associate cultural terms with semantically similar but distinct concepts, leading to the generation of inaccurate or misleading images. By overlooking the diversity of certain cultural subjects within a country, the richness and authenticity of cultural representation might be diminished.

Media bias

The deeper TTI technologies are embedded in social practices, the more significant their role becomes in shaping public perceptions of political events, conflict, and war (Laba, 2024). Laba (2024) compared TTI to traditional visual tools like Adobe Photoshop and Adobe InDesign, emphasizing that TTI models establish cultural meanings through operationalized technical systems, not human-centered design. Thomson et al. (2024) express their concern about the blurred boundary between fact and fiction as generative AI tools become integrated into media industry standard visual tool platforms such as Adobe's Creative Cloud. A substantial concern is being expressed about the use of AI-generated images within conventional photojournalistic practices (Thomson et al., 2024) as photojournalism has a deeply rooted tradition aimed at ensuring the ethical creation, distribution, and presentation of visual content.

Bias mitigating strategies

To minimize the risk of bias in the use of TTI technology, several bias-mitigation strategies have been proposed and tested. According to scoping review studies, bias mitigating can be divided into three divisions – model evaluation, institutional interventions, and user interventions. Model evaluation involves using a diagnostic dataset designed to assess the compositional visual reasoning skills of TTI generation models, system “guardrails” implemented within the TTI system, and user interventions as prompt expansion strategy, prompt specifiers and the use of reference imagery. Gusdorf et al. (2024) distinguish two sources of bias – training datasets as a source of bias and GAN (Generative Adversarial Network) architecture as a source of bias. While some research within this scoping review primarily focuses on bias mitigation strategies from the user's perspective, other studies explore the nature of specific biases and additionally consider strategies for their mitigation. For instance, two research papers on geographic representativeness (Hall et al., 2024; Basu et al., 2023) concluded that Region-CLIPScore should either be avoided or used with caution. This is because it fails to account for variations in perceptions of geographic representation across annotator locations and may reinforce stereotypes rather than promote realistic depictions. Mandal et al. (2023) emphasize the importance of auditing CLIP, given its central role in TTI generative models.

Several articles have discussed effective bias mitigation strategies from user perspective like image references (Zhang et al., 2023) and prompt specifier taxonomy (Sanchez, 2023). Though it is still suggested that effective bias mitigation in AI systems requires a multifaceted approach that combines technical interventions with an understanding of the broader socio-technical landscape (Rismani et al., 2023). Strongly critical views are expressed by Bianchi et al. (2023) highlighting concerns that, since demographic biases are complex and influenced by both linguistic characteristics and various factors within the visual domain, there is currently no generalizable strategy for addressing such deeply and broadly embedded biases. Bianchi et al. (2023) investigated the persistence of harmful representations of demographic groups in generative models, even when users employed careful prompting and institutions implemented safeguards their findings

revealed that, despite these interventions, TTI technologies continue to exhibit significant biases across multiple dimensions.

Bias-related ethical considerations within an educational process

While the majority of studies on bias-related ethical considerations in generative TTI systems within this scoping review focus on identifying specific biases or proposing mitigation strategies, only a limited number were identified as practical studies conducted within educational settings.

The study by Vartiainen et al. (2024) builds upon long-term co-design and design-based research aimed at integrating AI topics into school education. Through illustrative examples, it engages students in discussions on algorithmic bias, exploring its underlying causes, detrimental impacts, and possible mitigation strategies. Ali et al. (2024) address the learning objectives for educators when applying TTI in a learning environment by highlighting four key expected outcomes: “(1) the ability to effectively use TTI tools; (2) a technical understanding of the underlying mechanisms of TTI algorithms; (3) awareness of the ethical implications associated with these algorithms; and (4) the capacity to design AI-focused educational materials centered on TTI for use in their classrooms.”

According to Han et al. (2024) research results, for teachers generative AI (GAI) systems represent a novel dimension of digital citizenship, while parents often perceive GAI tools as toys or games, while students view them as intelligent and supportive companions. The integration of GAI, including TTI technology, into educational settings presents a complex dynamic of both opportunities and challenges. While the accessibility of TTI technology can foster creativity and engagement, they also pose risks, including the reinforcement of biased perspectives and the production of inaccurate or inappropriate content. According to Han et al. (2024), these concerns highlight the importance of deliberate oversight and moderation, such as the use of customized models trained on more diverse datasets. Such strategies are essential to prevent the reinforcement of stereotypes and to mitigate other forms of bias, which is important to maximize the educational benefits while minimizing its potential harm.

Discussion

According to UNESCO’s AI Competency Framework (2024), educators are expected to possess a foundational understanding of the ethical issues associated with artificial intelligence, including respect for data privacy, intellectual property rights, and relevant legal frameworks. Additionally, teachers are encouraged to engage in critical advocacy by initiating and leading actions that address ethical, socio-cultural, and environmental implications in the design and application of AI. They are also expected to actively participate in the co-creation of ethical guidelines for the responsible use of AI within educational contexts.

While policy frameworks advocate for ethical AI integration in education, the literature reviewed reveals the characterization of bias, explores bias-mitigating strategies,

and gives examples of practical studies conducted within the educational environment. Despite many articles discussing bias-related ethical concerns regarding the use of TTI technology and the rising initiatives with integration of TTI tools in education, significant gaps remain in understanding how learners of different age groups perceive algorithmic bias, and how educators can be effectively supported to foster critical AI literacy and raise awareness on bias-related issues. Future studies could investigate the pedagogical methods and frameworks best suited for age-appropriate education about generative AI ethics and visual media literacy. Research on bias-related ethical considerations aligns closely with the principles of Responsible Research and Innovation (RRI) main dimensions – anticipation, inclusivity, reflexivity, responsiveness (Shanley et al., 2022) considering potential impacts of innovation at an early stage, anticipating possible consequences, and actively participating in discussions about how science and technology can contribute to building a society founded on sustainable principles which promote ethical, sustainable, and socially meaningful scientific and technological progress.

Limitations of this scoping review include the selection of databases, keywords, specific including and excluding criteria. The search was limited to two academic databases – Web of Science and Scopus – focused only on articles containing the keywords *text-to-image* and *bias* within a specific time frame. Consequently, relevant studies indexed in other databases or using different terminology may have been overlooked. Additionally, the inclusion and exclusion criteria applied during the selection process inevitably shaped the thematic focus of the review, potentially narrowing the scope of bias-related perspectives considered.

Conclusions

Research within the area of TTI technology has experienced a significant rise since 2019 due to advancements in GAI systems, as well as increasing public interest and application in various sectors, including education and vocational training. Technological advancements in TTI provide unprecedented opportunities for image generation, but they also raise significant bias-related ethical concerns. Within this scoping review from the analysis of the studies three main categories emerged: (1) Characterization of bias, (2) Bias mitigating strategies, and (3) Exploring bias through practical investigations conducted within educational environments. Characterization of bias when working with TTI technology might include but are not limited to gender, age, affiliation, ethnicity, disability, cultural, geographical and media biases. Within this scoping review, bias mitigation can be categorized into three main approaches: model evaluation, institutional interventions, and user interventions. Model evaluation involves employing diagnostic datasets specifically designed to assess the compositional visual reasoning capabilities of TTI models. Institutional interventions, often referred to as system “guardrails,” are mechanisms implemented within the TTI system itself. User interventions include strategies such as prompt expansion, the use of prompt specifiers, and incorporating reference imagery. All stakeholders involved in the educational process should be informed about

the ethical implications of TTI technology and actively engage in discussions regarding bias-related ethical considerations at every stage of its use. This engagement is essential to promote the responsible application of AI within educational contexts. Technological advancements underscore the necessity of broadening visual literacy to encompass digital and AI-generated imagery, thereby empowering learners and educators to critically, ethically, and responsibly interact with content produced by TTI tools.

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EVALUATING THE IMPACT OF A MOBILE 'MENTAL ARITHMETIC' APP ON PRIMARY SCHOOL STUDENTS' MOTIVATION TOWARD MENTAL ARITHMETIC

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ABSTRACT

As technology in education becomes a way of everyday life, it is crucial to transform the mindsets of both students and teachers. This transformation is needed to break down prevailing stereotypes that see technology as a source of entertainment or a burden on teachers' work and to raise awareness of the potential of technology as an enabler of engagement and motivation in the learning process, thus potentially contributing to better educational outcomes in the long term.

To contribute to this field, this study analysed the impact of mobile learning on the development of mental arithmetic skills and students' attitudes towards this process by developing a dedicated maths app designed to improve primary school students' mental arithmetic skills. The needs of teachers and students identified in the valid literature were integrated into the app's development, ensuring that the solution meets the needs of both stakeholders and respects key pedagogical principles to maximize students' development.

The study compared pre-test and post-test results to assess the impact of the newly developed mobile app on students' motivational changes while learning numeracy skills. It measured changes in students' attitudes and motivation levels when comparing traditional mental arithmetic methods with the newly developed app.

The results of the surveys and focus group interviews showed that the developed mobile learning app contributes to increased student engagement and motivation while serving as an effective tool for self-directed learning experiences. The expert interview showed that the app's design and content are in line with both the general pedagogical principles and the age range of primary school learners. In particular, the importance of immediate and structured feedback, the possibilities for progress analytics, and the different mental arithmetic strategies were highlighted as contributing to the development of targeted and sustainable skills.

Keywords: *educational mobile app, mental arithmetic, mobile learning, motivation, primary school students*

Introduction

Mental arithmetic is a core component of early mathematics education and serves as a fundamental prerequisite for mathematical reasoning and problem-solving (Anderson et al., 2022; Hickendorff et al., 2019). Longitudinal evidence shows that students who automatise basic number facts facilitates the acquisition of more advanced mathematical concepts and is positively associated with wider academic attainment, including reading comprehension and overall curriculum achievement (Hickendorff et al., 2019; Ten Braak et al., 2022; Sunde et al., 2023). Nevertheless, many students struggle with motivation and confidence when working on mental arithmetic. Traditional classroom routines that rely heavily on repetition, speed-based drills and written assessments can cause discomfort; for some students these methods may foster mathematics anxiety and other negative emotions (Kupferman, 2015; Lloyd, 2016; Bureau et al., 2022; Poçan et al., 2023). Strengthening students' motivation is therefore critical for supporting their progress in mental arithmetic and for realising the wider academic benefits that arise from fluent calculation.

In addition to motivational factors, research emphasises the importance of developing number sense and fostering flexibility in strategy use. Students should be encouraged to understand the internal structure of numbers and to solve the same problem in different ways, choosing the most effective approach for the context (Jay et al., 2019; Proulx, 2019; Sunde et al., 2023). Widely used mental strategies such as splitting numbers into known components, rounding and adjusting, or using doubles support accuracy, fluency, and conceptual understanding (Hickendorff et al., 2019; Sunde et al., 2023). Importantly, digital tools, especially mobile apps that integrate gamified elements and provide immediate feedback, have proven effective in helping students – particularly those with lower initial proficiency – automate facts and apply strategies in an engaging and adaptive environment (Gonçaves et al., 2020; Outhwaite et al., 2019; Kim et al., 2021). However, these tools must be carefully designed: overemphasis on speed or rewards without conceptual depth may foster superficial learning and reduce long-term retention (Baker & Cuevas, 2018; Kim et al., 2021). To build sustainable mental arithmetic competence, learning tools and classroom practices must combine strategic variety, meaningful feedback, and opportunities for metacognitive reflection.

Promoting Motivation in Learning Mental Arithmetic

Motivation is a key psychological driver of learning and achievement, yet it is not a single construct – it comprises a set of interrelated factors that initiate, direct, and sustain goal-oriented behaviour (Schunk et al., 2014). In educational contexts, motivation can be classified as intrinsic, when students are driven by curiosity or personal interest, or extrinsic, when behaviour is influenced by external rewards or demands (Ryan & Deci, 2000). According to self-determination theory (Ryan & Deci, 2000), intrinsic motivation is more likely to emerge when learners experience autonomy, competence, and relatedness. Research has shown that when these basic psychological needs are met, students

demonstrate greater engagement, higher academic performance, and more sustained learning behaviours (Bureau et al., 2022; Howard et al., 2021; Schukajlow et al., 2023).

A central component of motivation is self-efficacy – students’ belief in their capacity to successfully complete specific learning tasks (Bandura, 1977; Schunk & Pajares, 2009). Self-efficacy influences how much effort students invest, how they cope with setbacks, and how they emotionally respond to challenges. Learners with higher self-efficacy tend to persist longer, adopt more effective strategies, and display greater confidence – especially in mentally demanding areas such as mental arithmetic (Gonçalves et al., 2020; Bureau et al., 2022; Poçan et al., 2023). Bandura (1977) identified four sources that shape self-efficacy beliefs: mastery experiences, vicarious learning through observing peers, verbal encouragement, and the interpretation of emotional or physiological states. When students experience success and feel supported, they are more likely to develop a belief in their ability to improve and succeed.

In this study, the primary focus is on enhancing students’ motivation to practise mental arithmetic. Motivation can be fostered through learning conditions that promote autonomy, competence, and a sense of achievement – such as success experiences, informative feedback, and opportunities for choice (Bureau et al., 2022; Howard et al., 2021). These are precisely the conditions embedded in the mobile learning approach used in this research. The mobile app integrates adjustable task difficulty, real-time feedback, and gamified elements that aim to support self-efficacy and engagement. These features are particularly effective for low-achieving students, providing a safe, structured environment in which learners can progress at their own pace (Kim et al., 2021; Herwin et al., 2022). However, existing literature consistently shows that such tools are most effective when integrated into a teacher supported and purposefully designed learning process (Al-Said, 2023).

Conceptualizing Mobile Learning and Creating Pedagogically Aligned Apps

In recent years, mobile technology has been increasingly used in education to address challenges related to student motivation. Mobile learning (m-learning) environments provide flexible access to tasks, engaging visual elements, and timely feedback, which can promote students’ autonomy and involvement in the learning process (Çukurbaşı Çalışır et al., 2022; Tang et al., 2023). These features are particularly effective in supporting the emotional side of learning by reducing fear of failure and reinforcing a sense of progress (Poçan et al., 2023; Mohamad Said et al., 2024). Additionally, m-learning encourages self-regulated learning by allowing students to choose when and how to practise. This autonomy not only increases engagement but also supports the development of self-efficacy – a key psychological condition for sustained motivation (Bureau et al., 2022; Gonçalves et al., 2020).

In scientific literature, however, m-learning is interpreted in varied ways – from a mere extension of e-learning offering content access anytime and anywhere (Hernawati & Jailani, 2019; Korucu & Alkan, 2011; Orhani, 2023) to a conceptually distinct pedagogical

approach integrated within traditional classroom environments (Marcus-Quinn & Hourigan, 2021; Quan & Zhang, 2024). While older interpretations consider m-learning a subcategory of e-learning, more recent studies argue that it has developed along different technological, social, and conceptual lines and deserves a precise and independent definition (Yan, 2015; Quan & Zhang, 2024). In this study, m-learning is defined as the implementation of technology-enhanced learning in traditional classroom settings using smartphones, tablets, or other mobile devices. It functions as a complement to face-to-face instruction, enriching classroom activities through meaningful technological integration. Importantly, this definition excludes laptops unless they replicate mobile-like interaction patterns, such as touchscreen-based interfaces (e.g., Chromebook devices).

To ensure successful m-learning implementation, educators must consider both its potential benefits and its inherent risks. Among the most frequently cited advantages are increased accessibility to learning materials, the promotion of personalised learning paths, real-time feedback, and significant improvements in student engagement, academic achievement, and motivation (Pedro et al., 2018; Poçan et al., 2023; Tang et al., 2023; T.-H. Wang et al., 2021). For instance, m-learning helps to overcome time and place limitations, supports self-directed learning, and enhances learning opportunities for students in remote areas (Yosiana et al., 2021; Hernawati & Jailani, 2019). Moreover, digital tools provide access to varied resources, including video-based instructions and practice apps, that reinforce student understanding both inside and outside the classroom (Chang & Lin, 2024; Dehbi et al., 2023). The ability of mobile tools to deliver instant and adaptive feedback has also been identified as a central factor in strengthening both self-efficacy and motivation (Poçan et al., 2023; Gonçalves et al., 2020).

Nonetheless, various risks must also be acknowledged. These include cognitive overload, distraction due to entertainment apps and social media, unequal access to devices, varying levels of digital competence among students, technical barriers such as poor internet connection or incompatible devices, and excessive reliance on technology (Çukurbaşı Çalışır et al., 2022; Dehbi et al., 2023; Fombona et al., 2020; Tang et al., 2023). Mobile devices can overwhelm students when used without clear instructional design or when information is presented too densely (Poçan et al., 2023). Similarly, attention may be diverted from academic tasks due to the presence of unrelated apps and notifications (Yan, 2015; Zhang, 2015). The novelty effect has also been observed as high initial engagement that fades if content becomes repetitive (Kim et al., 2021; Schukajlow et al., 2023).

To address these challenges and ensure that mobile apps truly support learning, it is essential to approach their development systematically. Based on a comprehensive review of academic studies, the author has formulated a set of key criteria that must be observed when designing educational apps. These criteria are structured around three interrelated dimensions: content, pedagogy, and technology, in alignment with the TPCCK (Technological Pedagogical Content Knowledge) model (Mishra & Koehler, 2006).

From the content perspective, the app must have clearly defined and measurable learning objectives that specify the exact knowledge and skills to be developed. The content should be focused and specific rather than overly broad or general, allowing learners

to engage with well-scoped material (Al-Amri et al., 2023; Hernawati & Jailani, 2019; Katayeva, 2023; Outhwaite et al., 2019; Tang et al., 2023; T.-H. Wang et al., 2021). It is also essential that the subject matter is academically accurate and precise, especially in the context of mathematics, where proper terminology, symbolic notation, and theoretical soundness are critical for conceptual understanding (Al-Amri et al., 2023). Furthermore, the content must be logically structured and sequential, with tasks organized by increasing complexity to support gradual learning progression and facilitate self-directed learning (Al-Amri et al., 2023; Gonçalves et al., 2020; Outhwaite et al., 2019).

From the pedagogical perspective, the design must consider the learners' developmental stage, cognitive abilities, and prior experience. Learning strategies should be age-appropriate and tailored to student needs to promote engagement and meaningful participation (Mishra & Koehler, 2006). The app must maintain a balanced cognitive load by aligning the complexity of content, methods, and visual elements with students' working memory capacity. Overloading learners with information or interaction demands can reduce motivation and hinder comprehension (Burke et al., 2022; J. Wang et al., 2023). The provision of immediate and personalized feedback is also essential. This feedback should be delivered in a format appropriate to the learner's level, whether visual, textual, or auditory, and should help them identify errors and recognize their progress (Al-Amri et al., 2023; Yu et al., 2021). In addition, effective motivational strategies should be integrated, such as those based on Keller's ARCS model (Keller, 1987), which emphasizes attention, relevance, confidence, and satisfaction as key drivers of sustained motivation (Al-Amri et al., 2023).

From the technological perspective, the structure of the app must match its pedagogical goals. This may involve either a linear structure, where content is presented in a fixed sequence for cumulative learning, or a modular structure that allows flexible navigation and promotes learner autonomy (Al-Amri et al., 2023; Burke et al., 2022; Farooqi et al., 2024; Joshi & Deole, 2025). The user interface must be visually clear and functionally supportive. This includes the use of readable fonts, high-contrast colour schemes, and intuitive icons, designed according to minimalist principles to avoid visual overload, particularly for younger learners (Ali et al., 2023; Joshi & Deole, 2025; Kaur et al., 2021; Ryan & Deci, 2000). Visual transitions and animations should only be used when they serve a pedagogical purpose, such as indicating progress or highlighting feedback, rather than as decorative distractions (Al-Amri et al., 2023; Ali et al., 2023; Outhwaite et al., 2019). The app should incorporate gamification elements, such as points, badges, avatars, or challenges, to enhance learner engagement and intrinsic motivation (Farooqi et al., 2024; Lee et al., 2023; Outhwaite et al., 2019; Yu et al., 2021). Moreover, learners should be able to monitor their progress through visible indicators, achievement levels, or personalized feedback, which supports self-regulation and goal setting (Al-Amri et al., 2023; Ali et al., 2023; Farooqi et al., 2024). Navigation must be consistent, intuitive, and cognitively accessible, especially for younger users, to reduce confusion and allow seamless movement between content areas (Kaur et al., 2019; Supandi et al., 2018; Tang et al., 2023). Finally, the app must offer adaptive functionality that responds dynamically to

the learner's performance by adjusting the difficulty level and structuring content in ways that support individualized learning (Al-Amri et al., 2023; Ali et al., 2023).

Methodology

This study applied a quasi-experimental design to develop and evaluate a m-learning app aimed at improving primary school students' mental arithmetic skills and motivation. The research consisted of two distinct phases: app development and classroom implementation.

The first phase involved identifying pedagogical, technological, and content-related requirements for designing a mobile app tailored to students' needs. A web-based app was created using HTML, CSS, and JavaScript, with backend functionality implemented through Node.js and MySQL. The Railway platform was used for hosting, and version control was maintained with Git and GitHub. Visual and gamified elements, including avatars and background illustrations, were designed using Canva to enhance engagement.

To assess motivation and self-efficacy, a 27-item questionnaire was developed based on the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich et al., 1991). The questionnaire was adapted to suit primary school students and was administered as a pre-test before the classroom implementation using the Quizizz platform. A pilot version was tested with a small group of students to ensure clarity and relevance. Several items were rephrased to avoid ambiguity and better reflect students' cognitive engagement, and all items were presented on a four-point Likert scale with visual emoji support.

In the second phase, the app was tested in two primary school classrooms over seven consecutive school days. The same mathematics teacher was present but did not participate in leading the activities. The researcher independently introduced the mobile app and managed all sessions. Before using the app, students engaged in mental arithmetic tasks using traditional methods, such as verbal responses to mental computation tasks, number columns, and written answers without calculators or support tools. These tasks followed a structured and time-limited format with feedback provided only after all tasks were completed, reflecting the approach described by Mencis (2012). The mobile app was then introduced during the main part of each math lesson. Each day students completed one 5-minute session individually using the app, practicing mental arithmetic in a focused and engaging format. Sessions were conducted at the same time each day to ensure consistency. The app recorded response accuracy and provided immediate feedback, allowing students to monitor their progress and continue independently. The researcher observed students' behaviour and provided technical assistance when needed. To deepen the interpretation of the findings, video observations were conducted during the lessons. These focused on students' emotional responses, engagement, and interaction with the app. Verbal reactions and behaviour patterns were recorded and thematically analysed. Ethical protocols were strictly followed: informed consent was obtained from all participants and their guardians, and all recordings were deleted after analysis.

After the seven-day intervention, the same motivation questionnaire was administered again as a post-test to assess changes in students' motivation. Quantitative data were analysed using Jamovi software. Descriptive statistics, factor analysis, internal consistency (Cronbach's α), and paired sample t-tests were performed to evaluate the impact of the app on motivation levels.

In total, 83 students from Grades 4 and 5 participated in the study. Participants were selected using a convenience sampling method, consisting of students accessible to the researcher in a school where the research took place. After the post-test, a focus group interview was organized to gain a deeper understanding of students' experiences during the use of the app. To ensure that students with different achievement levels were represented, all 83 participants were initially ranked based on their self-reported grades in mathematics from the previous term. For this study, it was assumed that students' self-reported grades accurately reflected their actual performance. Based on this data, students were divided into three performance groups. The "Low" group (grades 1–3) and the "Sufficient" group (grades 4–6) were merged, as only one student had indicated a failing grade. The remaining students were classified as "Optimal" (grades 7–8) and "High" (grades 9–10). From each group, four students were randomly selected, resulting in a planned sample of twelve interview participants. On the day of the interview, one student who had not been originally selected expressed a wish to participate in the focus group interview. As this student belonged to the "Optimal" performance group and demonstrated a strong willingness to share feedback, they were included in the session. For data analysis, students were coded using the abbreviation SK followed by a sequential number, which was also used later in the results section. As a result, the "Optimal" group was represented by five students, and the total number of participants in the focus group was thirteen.

During the interview, students provided in-depth comments on their emotional experiences, perceptions of the app's use, positive and negative aspects, and suggestions for improving its functionality and usability. Thematic analysis of the transcripts was conducted to identify patterns in student responses and triangulate the quantitative results. This mixed-methods approach enabled a comprehensive evaluation of the mobile app's impact on primary school students' motivation and engagement in mental arithmetic.

Results

To evaluate the quality of the developed app and its alignment with the previously established pedagogical, instructional, and technological prerequisites, specific evaluation criteria were designed and categorized into three broad groups: content-related, pedagogical, and technological. Each criterion was assessed using a three-tier scale (from one to three stars), indicating the extent to which the respective aspect was implemented in the app.

The content-related criteria addressed the alignment of the app's content with educational goals, academic accuracy, and logical structuring of tasks. All criteria in this

category received the highest possible rating (★ ★ ★). The app was developed with a clear objective – to improve students’ mental arithmetic skills – while ensuring accurate terminology and a well-structured sequence of tasks. The level of difficulty gradually increases, starting with single-digit problems and progressing to multi-digit calculations.

The pedagogical criteria focused on the app’s suitability for the target age group, the alignment of learning strategies with cognitive development, and the quality of feedback. Most pedagogical aspects were rated with three stars: the tasks are formulated and easy to understand, students have the freedom to choose between task types and difficulty levels, and gamification elements enhance engagement. However, the feedback system was rated with two stars due to its limited nature – it only indicates whether an answer is correct or incorrect without analysing the reasons behind mistakes or offering personalized suggestions.

The technological criteria were used to assess the app’s design, functionality, usability, and adaptivity. Most of these aspects also received the highest score. The app features intuitive navigation, a modular structure providing personalized learning paths, and a visual design tailored to young learners with contrasting colours, readable fonts, and a minimalistic layout. Nevertheless, some elements were rated with two stars: animations are used mainly for gamification, while the absence of sound effects limits sensory feedback. Additionally, the app lacks detailed progress tracking – it does not provide performance insights based on specific operations or number sets, nor does it allow learners to resume tasks from where they left off.

In total, out of 14 evaluated criteria, 11 received three stars, indicating full compliance, while three criteria were marked for improvement. These include personalized feedback, more detailed progress monitoring, and enhanced sensory engagement through sound. These areas represent key directions for further development to maximize the app’s educational potential and support student motivation.

In addition to the evaluation of the development prerequisites, which enabled the analysis of the app’s quality from pedagogical, content-related, and technological perspectives, quantitative data analysis was conducted using a structured observation protocol. Descriptive statistics provided an overview of students’ usage intensity, such as how many students attended, actively participated, and completed at least one level, as well as emotional engagement, including enthusiasm, anxiety, distraction, perceived difficulty (e.g., challenging tasks, need for assistance), strategy use, and technical issues encountered. These indicators helped identify key trends in the app usage process, including both strengths and areas for improvement. The results were further interpreted in connection with qualitative data gathered through student’s focus group interviews to offer a multidimensional insight into the app’s effectiveness, user needs, and suggestions for improvement.

Quantitative data indicated high student engagement with the app throughout the implementation period. On average, 77 students participated in each session, and 76 completed at least one task level, representing a 98.7% active engagement rate (see Table 1). This high figure demonstrates that the app not only captures attention but also sustains it. These findings are reinforced by interview responses for example, student

SK5 noted, “Maybe I wouldn’t want to play it all day and night, but I liked using it at the beginning of the lesson and sometimes at home.” Similarly, several students expressed that they enjoyed using the app outside of class time during breaks or at home. SK7 remarked, “I played again in the evening because it was fun to build my island.” This aligns with the usage data, showing that an average of 36 students per day voluntarily accessed the app beyond the scheduled sessions, highlighting its potential as a sustainable and motivating tool for independent learning.

Student engagement was evident not only through activity but also through emotional involvement – on average, 68 students per session expressed joy, and excitement, or made comments about what was happening, especially when rewards were earned, new island parts were unlocked, or avatars were changed. This emotional involvement indicates the effectiveness of the visual and content-based design elements. For instance, SK7 emphasized, “I couldn’t stop solving tasks and earning coins because I wanted to build my island and buy the next piece!” Such statements reflect how the app was able to maintain attention and inspire continued participation. Other interviewees similarly cited island-building and avatar customization as key reasons they returned to the app. The app’s modular structure, allowing students to choose task types and difficulty levels, as well as engage in creative elements like island construction and avatar design, created an environment where learners felt in control and motivated to engage. Thus, the design and gamification elements contributed significantly to students’ willingness to solve more tasks.

Despite the generally high engagement and positive trends, the personalized feedback within the app did not fully meet students’ needs for deeper understanding. While all tasks provided instant feedback on whether answers were correct or incorrect, there was not enough time during sessions for students to reflect on their mistakes or explore the strategy mode, which could have supported understanding of problem-solving steps. Several students in interviews expressed a desire for explanations for example, understanding why an answer was wrong or what to do differently next time. These responses indicate that the personalized feedback criterion was only partially met: the feedback was quick and functional but not analytical. Enhancing this feature in the future could significantly support deeper understanding and learning progression.

Some minor technical issues were also observed during implementation – 3.9% of students encountered technical difficulties (see Table 1). Reported issues included unsaved progress (requiring task repetition) and problematic button placement that hindered navigation. These problems were documented and resolved promptly during the first days of the trial: the button layout was improved, the data-saving function was enhanced, and the home screen was optimized to improve usability. No reports were registered of app slowdown, error codes, or authentication issues. The only significant error occurred on the first day when a faulty line of code caused incorrect division tasks with remainders to be generated for 16 users, this was corrected immediately. The feedback received from students directly informed immediate improvements to the app, making it more suited to their needs. Therefore, the learning environment provided by the app is considered stable and reliable, allowing students to focus on the learning tasks rather than technological problems.

Table 1 Summary of students' engagement and experience with the app

Number of students who	Mean	Median	SD	Min	Max
attended	75.429	77	4.276	67	80
actively used the app	74.857	76	5.242	64	80
completed at least one level	75.429	77	4.276	67	80
showed enthusiasm	67.571	69	8.121	53	78
disengaged	2.857	2	2.410	1	8
needed teacher assistance	6.857	4	8.295	0	24
expressed dissatisfaction	0.000	0	0.000	0	0
showed anxiety	0.714	0	1.496	0	4
reported tasks as too difficult	3.000	0	5.508	0	15
putted in minimal effort	1.000	1	1.000	0	2
used the app voluntarily outside scheduled time	36.000	43	17.944	0	52
asked about additional app features	7.714	7	4.821	2	16
learned strategies	0.286	0	0.756	0	2
had login technical issues	0.000	0	0.000	0	0
were unable to complete	2.286	0	6.047	0	16
tasks due to technical issues needed to switch devices due to technical limitations	0.429	0	1.134	0	3

Following the evaluation of the pedagogical, content-related, and technological alignment of the developed mobile app, this subsection analyses its potential impact on students' motivation to improve their mental arithmetic skills. The analysis is based on data collected from two testing sessions, before and after the app's implementation, using custom-designed questionnaires aimed at identifying statistically significant changes in motivation levels and their possible links to the app usage experience.

The results show that after using the app, both the arithmetic mean and the median values increased across most statements, while the standard deviation (*SD*) often decreased. This indicates not only a general improvement in students' interest in mental calculation but also a more consistent and less dispersed set of responses. The most notable change was in the statement "Mental arithmetic is an enjoyable activity I like doing" where the mean score increased from 2.26 (*SD* = 0.92) to 3.46 (*SD* = 0.67), suggesting a clear shift in attitudes (see Table 2). According to Bandura's Self-Efficacy Theory, a sense of competence influences motivation. The app's gradual difficulty progression, error-tolerant structure, and gamified feedback allowed students to experience success, which is one of the strongest sources of self-efficacy. Quantitative observations supported these findings. On average, 68 students per day showed visible enthusiasm (smiling, cheering, or sharing success), while expressions of anxiety were rare – only about one student per day. The only exception occurred on day three when four out of 80 students experienced difficulty with the speed test due to overly rapid task progression, which was corrected the following day. No dissatisfaction was reported at any point.

Table 2 Comparison of survey responses before and after using the app

Statement	Mean	Median	SD
(Pre) I like doing mental arithmetic	2.82	3.00	0.817
(Post) like doing mental arithmetic	3.41	4.00	0.771
(Pre) Mental arithmetic is an enjoyable activity I like doing	2.26	2.00	0.922
(Post) Mental arithmetic is an enjoyable activity I like doing	3.46	4.00	0.674
(Pre) I would be interested in learning mental arithmetic with a special app	3.53	4.00	0.831
(Post) I would be interested in learning mental arithmetic with a special app	3.77	4.00	0.516
(Pre) I would like to learn mental arithmetic using a phone or tablet	3.16	3.00	0.922
(Post) I would like to learn mental arithmetic using a phone or tablet	3.59	4.00	0.807
(Pre) The more I practice, the better I can perform mental arithmetic	3.64	4.00	0.821
(Post) The more I practice, the better I can perform mental arithmetic	3.80	4.00	0.528

The scale items related to technology use already showed high values in the pre-test, but post-test results were more consistent. For example, the percentage of students who strongly disagreed with learning via a special app dropped from 8.2% to 0%, while strong agreement rose from 67.6% to 81.4%. Similarly, the average score for the statement about learning via phone or tablet increased from 3.16 to 3.59. Interview participants also expressed a clear preference for practising mental arithmetic in digital form. For instance, student SK7 noted: “In the app, you can choose what you want to calculate, but in class, you just do what the teacher assigns to you. And sometimes there’s not enough time to think.” During the use of app, students remained focused on tasks; on average, only two students per day momentarily disengaged, such as by looking away or briefly talking to classmates.

Two separate motivation scales were constructed, one before and one after using the app, each consisting of six statements reflecting students’ motivation to perform mental arithmetic. Statements included: “I like doing mental arithmetic”, “Mental arithmetic is an enjoyable activity”, “I like doing challenging mental tasks”, “I prefer difficult examples over easy ones”, “Mental arithmetic is important”, and “I do mental arithmetic even when not required”. To ensure the reliability and structure of the scale, statistical tests were conducted. Shapiro–Wilk tests showed that none of the 12 items (six before and six after) followed a normal distribution ($p < .001$). Skewness for the pre-test ranged from -0.98 to 0.80 ; post-test data showed more negative skewness, particularly for the statement “Mental arithmetic is an enjoyable activity” with skewness = -1.45 and kurtosis = 3.13 . Therefore, non-parametric methods were used. Spearman’s correlation confirmed statistically significant relationships between most items (e.g., $r = 0.63$

Table 3 Motivation changes before and after using the app

	<i>W</i>	<i>p</i>	Mean	Median	<i>SD</i>
Motivation (before)	210	< 0.001	2.59	2.50	0.668
Motivation (after)			3.10	3.17	0.568

and $r = 0.78, p < 0.001$). Exploratory factor analysis supported a single-factor structure, and Cronbach's α confirmed internal consistency: 0.76 (before) and 0.75 (after). Based on these results, each respondent's motivation score was calculated as the average of the six items. To compare the motivation levels before and after using the app, a Wilcoxon signed-rank test was conducted. The results showed a statistically significant increase in motivation: $W = 210, p < 0.001$. The mean score rose from 2.59 to 3.10, and the median increased from 2.50 to 3.17. The standard deviation also decreased (from 0.668 to 0.568), indicating more consistent and unified attitudes among students (see Table 3).

Although no statistically significant correlation was found between students' midsemester grades and motivation changes ($r = -0.131, p = 0.290$), a tendency was observed: students with lower academic performance showed slightly higher motivation gains. ANOVA results ($p = 0.177$) and Games–Howell post hoc tests confirmed that differences between groups were not statistically significant, but descriptive data supported the trend. Students' confidence was also assessed. For the statement "When I do mental arithmetic, I feel confident in my abilities" the average rating increased from 2.70 ($SD = 0.96$) to 3.26 ($SD = 0.74$). Strong agreement doubled from 20.3% to 41.4%, while strong disagreement dropped from 14.9% to 1.4%. A separate self-efficacy scale was also created using six statements (five positive, one reversed). After recoding the negative item, Cronbach's α values were $\alpha = 0.74$ (before) and $\alpha = 0.75$ (after), with no significant reliability loss when excluding any item. Factor analysis confirmed a single-factor structure. A Wilcoxon test showed a significant increase in self-efficacy: $W = 372, p < 0.001$, with the average score rising from 2.92 to 3.26.

In conclusion, the use of a pedagogically grounded mobile app significantly enhanced students' motivation and self-efficacy in mental arithmetic. While no statistically significant differences between performance groups were observed, the trend indicates that such tools are particularly beneficial for students with initially lower confidence. These findings highlight the potential of m-learning apps to support both engagement and independent learning.

Discussion

The aim of this study was to design and pilot a mobile app for improving mental arithmetic skills and to determine whether and how its use contributes to increased motivation among primary school students. To ensure the app's alignment with educational goals and learners' needs, the design process was guided by the TPACK framework, which emphasizes that effective digital tools in education must integrate pedagogical goals, content-specific requirements, and technological possibilities (Mishra & Koehler, 2006).

This framework led to the formulation of 14 preconditions, which were later adapted as evaluation criteria.

The developed app included multiple functional sections to foster both mental arithmetic skills and student engagement. Learners could choose between natural or whole number sets and practice four arithmetic operations in varied combinations, enabling individualized task sets suitable for grades 1–6. This supports personalized learning principles, which Boynge et al. (2024) argue enhance self-regulation, motivation, and academic outcomes. Similarly, Gonçalves et al. (2020) highlight that flexibility in task selection allows students to focus on areas requiring more practice, fostering deeper learning and sustained engagement.

Two learning modes were available in the app: a training mode and a speed mode. The training mode allowed students to solve tasks at their own pace without time pressure – crucial for those who may experience anxiety or attention difficulties under timed conditions. Prior studies have shown that time limits can negatively impact younger students' emotional wellbeing and performance, often increasing stress and anxiety (Gonçalves et al., 2020; Hussain et al., 2021; Outhwaite et al., 2019). Therefore, offering a stress-free mode contributed to a more positive learning experience. In contrast, the speed mode was included based on research showing that dynamic and game-based challenges can boost student motivation and engagement (Anderson et al., 2022; Boynge et al., 2024). Pilot results confirmed that high-achieving students more often used the speed mode, underscoring the value of offering both formats.

A dedicated strategy section provided textual and audiovisual explanations of various mental arithmetic techniques. This multimodal approach addressed diverse learning styles and supported engagement and comprehension (Gonçalves et al., 2020; Kim et al., 2021). It was also designed to support self-directed learning by allowing students to explore and experiment with different strategies independently (Poçan et al., 2023; Ryan & Deci, 2000). However, during the pilot, this section was underused. Observations showed that students focused primarily on task-solving and game elements due to time constraints. Even during breaks, strategy exploration was rare. This suggests the feature's potential was not fully realized and may be more effective in-home learning or teacher-guided settings. Further research is needed to evaluate its actual impact, though literature suggests that strategy explanations can serve as valuable resources when learners have adequate time and a supportive environment (Howard et al., 2021; Kim et al., 2021).

Gamification elements such as point systems, virtual currency, levels, avatars, and progress tracking were included to increase motivation and engagement. Students earned points for correct answers and used them to unlock island features in a virtual world. Although the island layout was the same for everyone, the avatar customization feature offered a sense of personalization. This reward system supported intrinsic motivation by providing immediate feedback and a sense of accomplishment. Gamification is known to enhance engagement by fostering autonomy, competence, and a sense of belonging, particularly when paired with clear rewards and achievable goals (Bureau et al., 2022).

A simplified progress tracking feature helped students monitor their improvement, promoting self-efficacy by highlighting both strengths and areas for improvement (Hussain et al., 2021).

To evaluate the impact of these features on motivation, changes were analysed before and after app usage using both quantitative and qualitative data. Results showed a statistically significant increase in motivation ($p < .001$). The median score rose from 2.50 to 3.17, suggesting notable motivational gains within a short pilot period. This increase can be attributed to several app features designed to support motivation: personalized content, immediate feedback, and gamification that aligns with students' developmental levels (Howard et al., 2021; Bureau et al., 2022). These findings are consistent with self-efficacy theory, which states that belief in one's capabilities enhances persistence, focus, and achievement (Schunk & Pajares, 2009).

Interview data further supported this: students reported that visible progress and improvements motivated them to continue. Some noted that the speed mode pushed them to outperform themselves, while the training mode helped them strengthen specific skills. These observations show that students actively used the app to guide their learning based on individual needs. Such adaptive use aligns with studies highlighting that motivation increases when learners can set goals, control the pace, and see tangible progress (Bureau et al., 2022; Howard et al., 2021). The app's progress tracking and structured game environment contributed to building self-efficacy, which in turn supported goal-directed behaviour and motivation (Hussain et al., 2021).

Conclusions

Based on the analysis of the scientific literature, the app development process, the app validation and the results obtained, the author has drawn several important conclusions:

1. The well-thought-out implementation of m-learning in the learning process contributes to students' learning motivation, digital skills development and targeted engagement if it is planned strategically, i.e. considering students' needs, age and subject specifics. Its effectiveness is based on the choice of appropriate apps, clear rules for use and structured lesson planning that allows technology to be used meaningfully rather than formally or for entertainment.
2. Developing numeracy skills in primary school is an essential prerequisite for improving students' mathematical reasoning and cognitive abilities, and its targeted development relies on promoting number sense, flexibility of strategies, automation of numerical facts and integration of modern teaching techniques, including digital technologies, into the learning process.
3. The quality of the development of an app is essentially determined by its compliance with clearly defined pedagogical, content and technological criteria that ensure its suitability for learning purposes.
4. The use of a mobile app that is pedagogically, content-wise and technologically sound can significantly increase students' motivation to do mental arithmetic.

5. The adaptive environment of the app, which allows students to choose the tasks and the pace, not only promotes positive emotional engagement and low anxiety, but also contributes significantly to self-efficacy, giving students confidence in their ability to complete learning tasks, contributing to increased motivation.
6. Personalisation, adaptive logic and gamification elements, combined with the possibility to choose the type of tasks and review one's own progress, contribute to students' engagement, learning motivation and the development of self-directed learning skills.

Summarizing the above mentioned findings, the author concludes that the aim of the thesis is fulfilled and the research hypothesis “developing and validating a mobile app for developing mental arithmetic can contribute to increasing the motivation level of primary school students’ is confirmed.

A possible way forward includes the implementation of a longitudinal study to assess the impact of regular use of the app on students learning performance and long-term motivational change, comparing the results with a control group without the app. At the same time, the app can be improved in several aspects. Firstly, it could be enhanced with new head counting strategies. Secondly, the feedback system should be improved to make it more accurate and informative. Thirdly, the gamification elements of the app could be extended by introducing new visual themes and interactive features that would encourage more sustained user engagement. Finally, it would be useful to improve the system for measuring progress by developing a detailed statistical report in which the user could see their mistakes, the strategies used, the distribution of task types and the dynamics of progress over time.

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ACADEMIC INTEGRITY AND GENERATIVE AI RESEARCH FOR HIGHER EDUCATION: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

Since the spring of 2023, when generative AI (GenAI) tools became available to the public and their use became widespread, the question of academic integrity in educational processes has been raised. GenAI has created conditions in which new situations arise at higher education levels (and eventually at other levels of education), and teaching and learning, as well as assessment, can be carried out with the help of GenAI. This review offers a detailed insight into the current research landscape and outlines future research needs to promote academic integrity and the ethical use of GenAI in higher education. By assessing articles published in 2023–2025 and indexed in the Web of Science and Scopus databases, the review identifies the methods, research designs, and samples used, summarises the main directions for potential future research, and identifies research gaps. The systematic literature review identifies the qualitative, quantitative, and mixed methods used in the study, such as interviews, surveys, case studies, and experimental designs. Study samples typically included students and academic staff, but often lacked cross-cultural perspectives and studies that explored academic integrity issues in depth. Research gaps were also identified, such as insufficient attention to the specificities of different disciplines and the long-term impact of GenAI technology.

Keywords: *academic integrity, generative artificial intelligence, higher education, research methods, systematic literature review*

Introduction

Looking back to the ethical and epistemological foundations the very beginnings of academic integrity can be found in the works of ancient Greek philosophers Plato and Aristotle, who emphasised the pursuit of truth (aletheia) and the cultivation of intellectual virtues such as wisdom (Sophia) and practical reason (phronesis) as essential components of a virtuous life (Hadot, 2002). In Roman rhetoric, thinkers like Cicero introduced the concept of ethos – the speaker’s moral character – as central to persuasive and ethical communication (Kennedy, 1963). These classical ideals laid the groundwork for later

academic norms centred on honesty, responsibility, and trust in knowledge transmission. Over the centuries, these principles were formalised and institutionalised – first in medieval universities, where theological orthodoxy held supervisory power over scholarly conduct, and later in the Enlightenment, where individual authorship and empirical evidence became cornerstones of academic life (Rüegg, 1992; Shapin, 1994). In the present, academic integrity continues to evolve and, due to the massive use of GenAI, faces unprecedented challenges, which blur traditional norms and draw lines between the originality of thoughts, creativity, and authorship (Moya et al., 2024; Macfarlane et al., 2014). New challenges have created a need to redesign pedagogical, ethical, and institutional approaches to uphold academic integrity principles in a rapidly transforming teaching and learning landscape. Also, the broad implementation of GenAI in higher education represents a significant paradigm shift, with profound implications for teaching, learning, and academic culture. Tools like ChatGPT and other large language models generate human-like and convincing text, which has fascinated and alarmed the academic world. With GenAI being integrated into students’ day-to-day academic work, stable assumptions about authorship, originality, and intellectual effort are under siege. Underlying these changes is one of the most critical institutional values: academic integrity.

Academic integrity is traditionally based on principles such as honesty, trust, and accountability, and for decades has formed the foundation of educational assessment and scholarly activity. However, the capabilities of GenAI directly contest those principles, erasing the lines between individual effort and machine assistance, as well as between original ideas and algorithmic outputs. Terms, such as “AI giarism” (Chan, 2023), label the inappropriate – or at least misleading – use of AI-generated content, and raise questions: who owns that content and accepts intellectual authorship for it? Moreover, GenAI can diminish cognitive engagement among students by perpetuating a ‘copy-paste’ culture, which impacts critical thinking and learning autonomy (Dai et al., 2023).

The difficulty is compounded by the fact that traditional forms of assessment are poorly suited to the new GenAI reality. The distinction between student/tool and human/machine is apparent in many exams, essays, and even coursework assignments (Evangalista, 2025) – a distinction that GenAI is blurring. Institutional policies and academic rules are slow to adapt, resulting in a lack of guidelines, inconsistent application, and students being left unclear about their responsibilities (Pudasaini et al., 2024). Additionally, creating blind spots for the use of artificial intelligence in the study process. Philosophically speaking, the growing sophisticated integration of GenAI raises the question of whether it constitutes a simulacrum or a hyperreality – a concept introduced by Baudrillard (2001) – when the gap between what is real and what is fake becomes so narrow that imitation effectively can obscure authenticity. Perhaps the most ontological question about this epoch in education is: what does it mean to ‘learn’ or ‘create’ in an age where generative systems are sophisticated enough to mimic both convincingly?

Although there is an increasing interest in the topic, the scientific literature on it remains scattered both thematically and methodologically. Most studies are narrowly focused on student perceptions of GenAI, while others explore broader ethical and

pedagogical issues. However, there is still a wide gap in research to synthesise studies to build a coherent understanding of how academic integrity is being conceptualised and transformed within the age of GenAI. Also, technology has experienced a rate of development far surpassing the speed of institutional responses, and many educators lack appropriate frameworks, policies, or pedagogical strategies to respond effectively to GenAI-augmented solutions in learning (Ghimire & Edwards, 2024).

A casual glance at the latest research reveals that one of the key observations is that research tends to be reactive, often focusing on detection technologies, student behaviours, or specific ethical concerns. Syntheses of existing studies, evaluations of methodological approaches, and identification of future research directions are needed. As Dai, Liu, & Lim (2023) noted, a review of the existing literature is necessary to identify gaps and vulnerabilities in research methods. Assessing the balance between empirical and conceptual contributions (Evangelista, 2025) and promoting consistency and reproducibility across studies (White et al., 2024) is also important.

Previous studies have examined the transformative impact of GenAI on higher education, focusing on both the opportunities and challenges it presents. Chan (2023) examined how the unethical use of GenAI tools compromises academic standards. Dai, Liu, & Lim (2023) discussed the risk of fostering a culture that devalues critical thinking and originality. Furthermore, Evangelista (2025) analysed the shortcomings of existing assessment practices in detecting AI-generated work, while Pudasaini et al. (2024) highlighted the need for more straightforward institutional guidelines. However, there is still a lack of systematic analysis that synthesises these diverse perspectives, particularly regarding future research directions and unexplored gaps.

Methodology

This review is contributing to the research situation in the higher education field by conducting a systematic literature review of academic integrity research in the context of the application of GenAI in higher education. Three research questions were defined to guide the review: RQ1 – What research methods, models, and populations are currently employed in GenAI and academic integrity research? RQ2 – What recommendations are made concerning future research? RQ3 – What are the gaps or limitations in the current literature?

The aim of this review summarise recent publications in this area, providing a structured overview of current research trends while also identifying potential areas for further research and contributing to a more consistent understanding of how academic integrity is evolving in the context of GenAI. It thus aims to support the development of evidence-based policies, ethical frameworks, and pedagogical approaches tailored to the challenges of GenAI-assisted higher education. The first phase of analysis was carried out by using the PRISMA Protocol for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018) to ensure a clear and transparent selection process. The focus was on overlooking two major databases, Web of Science and Scopus, using two keywords: “Generative AI and Academic Integrity” and “Generative AI and Plagiarism.”

Table 1 The keywords used in the PRISMA protocol

Key Words	Generative AI and academic integrity	Generative AI and plagiarism	Overall
1st database: Web of Science			
In total	657	491	1148
2023–2025	525	368	893
Articles	402	260	662
Highly cited	15	12	27
2nd database: Scopus			
In total	666	760	1426
2023–2025	600	611	1211
Articles	339	284	623
Highly cited	58	38	96
Duplicates deleted		37	
Included		86	

In total, 1,448 publications were identified in the Web of Science, and 1,426 were identified in Scopus. Most of these studies were published between 2023 and 2025. After removing 37 duplicates, 86 articles were selected for further analysis. (see Table 1)

To decide which articles to include in the second phase analysis, the two inclusion criteria were applied: 1) the article must present original research with a clear description of the method used; 2) the topic must focus on higher education and the use of GenAI related to academic integrity. That means that articles were excluded if they were theoretical or opinion-based without research methods. After reviewing the abstracts and full texts, 47 articles were excluded for not meeting these criteria, leaving 39 studies for the final review.

Data Analysis

Each of the 39 studies was analysed using a simple coding system to organise the information. Articles were grouped based on: 1) type of method (qualitative, quantitative, or mixed methods); 2) type of research design (for example, surveys, interviews, experiments); 3) target group (students, educators, administrators), and 4) recommendations for future studies.

Through this process, common research patterns and areas where more research is needed were identified. The analysis also helped answer the three research questions by illustrating how the topic has been studied and identifying areas for improvement.

Results and findings

Academic integrity and GenAI research in higher education exhibit methodological variability, but certain specific paradigmatic orientations are seen. In the first screening phase, a broad search strategy was used to identify relevant literature. This phase

revealed the full scope of academic publications related to GenAI and academic integrity. In the first phase of the review, a total of 2,574 studies were retrieved from Web of Science and Scopus using predefined keyword combinations. After removing 37 duplicate entries, 2,537 records were screened for relevance based on titles, abstracts, and keywords. This broad search confirmed the rapid growth of academic publications on GenAI and academic integrity in the years 2023–2025, reflecting the increasing attention given to this topic in higher education research. However, initial observation revealed that many of these studies were conceptual, editorial, or lacked clearly defined empirical methods. A significant proportion also focused on systematic reviews done before 2022/2023 development, theoretical debates, and GenAI applications unrelated to academic integrity. This highlighted the need for more detailed methodological screening in the second phase to ensure that only methodologically sound and directly relevant studies were included in the final synthesis.

Figure 1 shows the distribution of data collection methods across the 39 studies included in the final analysis. The chart shows that qualitative data collection methods were the most frequently used, appearing in 24 studies. These included interviews, thematic analyses, and phenomenographic approaches aimed at understanding the lived experiences and ethical perceptions of students and educators. In contrast, quantitative data collection methods – such as structured surveys and experimental tasks – were applied in only 7 studies, indicating a relatively limited focus on statistically generalisable findings within the current research landscape. Notably, mixed-methods designs were used in 18 studies, combining elements of both qualitative and quantitative techniques. However, as noted earlier, these designs often lacked full methodological integration, instead presenting parallel findings without deep synthesis. There were only 7 studies that used quantitative methods, including surveys, structured observations, and experimental study designs that involved getting GenAI test results.

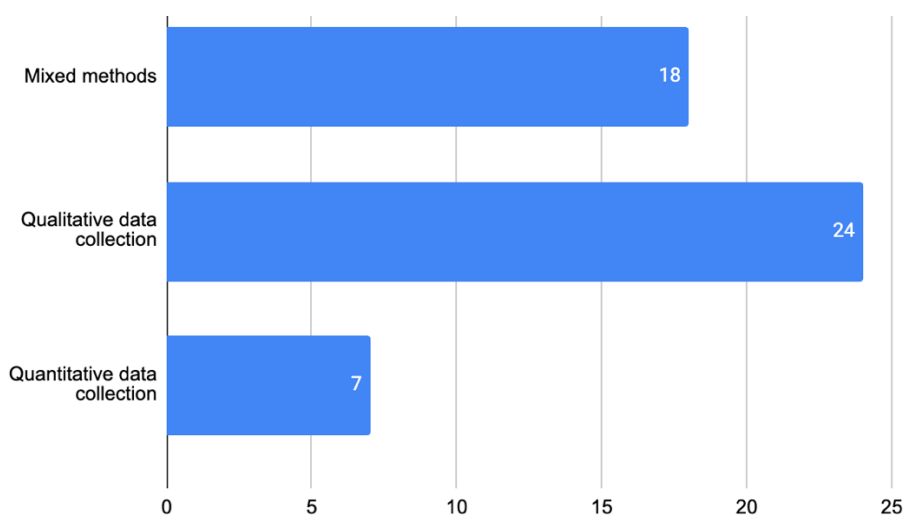


Figure 1 Phase 1 results – research methods

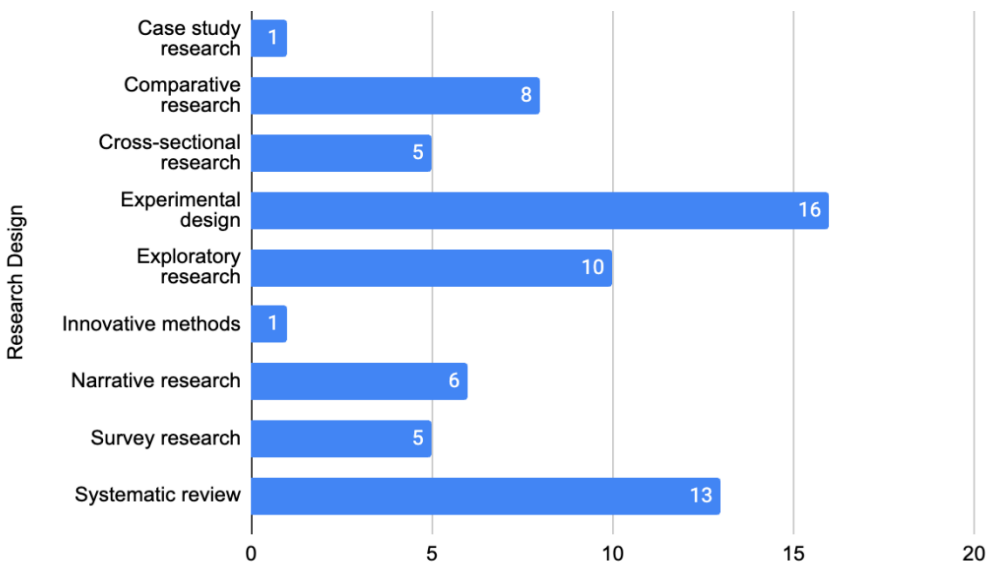


Figure 2 Phase 1 results – research designs

While qualitative methods dominate in exploring ethical and perceptual dimensions of GenAI and academic integrity, there is a growing interest in mixed-methods approaches to capture the complexity of this evolving field.

The mostly used design type (Figure 2) was experimental design, used in 16 studies, often in the context of evaluating AI-generated outputs, comparing student-written and machine-produced content, or testing plagiarism detection tools. A significant number of studies (13) employed a systematic review design, reflecting the rapid growth of literature reviews aiming to synthesise early findings on GenAI and academic integrity. Exploratory research (10 studies) and comparative research (8 studies) were also represented, suggesting a strong focus on identifying new patterns and evaluating differences between groups, tools, or educational contexts.

Designs such as narrative research (6), survey research (5), and cross-sectional studies (5) contributed to mapping perceptions and practices, especially among students and educators. Meanwhile, more context-specific or theory-driven designs, such as case studies and innovative methods, were used infrequently, each appearing only once. This underuse points to a gap in deep contextual or experimental innovation in early research.

Following the screening process in Phase 1, a more selective process was conducted in Phase 2, focusing on the clarity of research methods and the clear explanation of the empirical basis. Of the 86 articles identified in Phase 1, 47 were excluded during full-text analysis for reasons including lack of explicit research design and conceptual or opinion-based content. The remaining 39 studies formed the basis for the final analysis.

Of the 39 studies discussed, a dominant trend emerged toward short-term, practical designs with limited theoretical or long-term development. The most typical method employed involved comparative or quasi-experimental designs, such as studies comparing

the performance of texts written by GenAI using ChatGPT with that of students (e.g., Fergus et al., 2023; Perkins et al., 2024). Most of the studies were narrowly shaped, quantitative, and practical designs that focused on a single instrument or test. Cross-sectional survey designs were mostly employed in quantitative studies to measure dominant attitudes, awareness, and practices among teachers and students (e.g., Bin-Nashwan et al., 2023; Kelly et al., 2023). Although the method yields pragmatic findings, its reliance on single measurements and self-report data limits the ability to monitor longitudinal change or identify contextual variations.

Less common were phenomenographic and case study approaches, which provided qualitative, more profound insights into the experiences and views of educators (e.g., Derakhshan & Ghiasvand, 2024; Vetter et al., 2024). Some employed media discourse analysis or theoretical models to offer conceptual or critical analysis, although these tended to be more exploratory (Nam & Bai, 2023; Lancaster, 2023). To date, the literature has been particularly concerned about the lack of longitudinal and cross-national research, despite the global importance of GenAI in education. That gap reflects an urgent need for strategically conceived, cross-context, and time-sensitive studies to more fully portray the developing realities of GenAI in higher education.

Methodological Approaches

Quantitative approaches were the methodological norm, as evidenced in 21 studies that most commonly employed surveys or experimental measures to assess student behaviour, attitudes, and the efficacy of GenAI detectability tools (Bin-Nashwan et al., 2023; Kelly et al., 2023). Qualitative studies were also prevalent, comprising 20 studies that employed interviews, thematic analysis, or phenomenological inquiry to illuminate the richness of individuals' experiences with GenAI in the academy (Derakhshan & Ghiasvand, 2024; Yan, 2023). Another methodological trend that caught notice during this period of research was the application of prompt evaluation in 13 studies, indicating that researchers were interested in knowing the differences in GenAI performances based on tasks and prompts. These studies highlighted the strengths, weaknesses, and pedagogical potential of tools such as ChatGPT, Dalle-E, Chatsonic, Google Bard, Microsoft New Bing (Fergus et al., 2023; Sallam et al., 2023; Kelley et al., 2023; Watts et al., 2023; Salinas-Navarro et al., 2024). 10 studies employed experimental designs, mainly to test the detection technology or to compare the performance of human- and AI-generated texts in controlled or semi-controlled settings (Elkhatat, 2023; Waltzer et al., 2023).

Interview-based studies emerged in nine reports, primarily investigating the perspectives of educators and students, as well as ethical issues and institutional readiness. While more studies employed a mixed-methods approach, authentic methodological integration was the exception. Most mixed-methods reports featured parallel quantitative and qualitative analyses, rather than rich, in-depth, or fully integrated designs. Overall, while new directions are emerging, most of the work still focuses on perception studies and stand-alone assessments, with a noticeable lack of longitudinal, comparative, or theory-driven designs – an essential area for development as the field continues to mature.

The specificity of the samples drawn in the studies indicates a continued focus on students, particularly at the undergraduate level. For 21 (54%) of the 39 studies, students were the primary audience of the research, with 11 (29%) targeting undergraduate students and 3 (8%) targeting postgraduate students. These studies looked at students' perceptions of MI in contexts such as classrooms, examinations, essays, exam papers, or research papers (Bin-Nashwan et al., 2023; Fergus et al., 2023; Yusuf et al., 2024; Derakhshan & Ghiasvand, 2024; Ibrahim et al., 2023).

Although student-centred research provides valuable insights into how users construct their relationships with GenAI and how ethics inform a user's decision-making, such a framework limits the field of research into academic integrity issues. It does not provide a comprehensive understanding of academic integrity issues within the context of GenAI use.

The second group – the Educators – has been studied in 13 separate studies; however, these studies have primarily been conducted as support or mixed-methods studies. Studies with faculty members and staff have mainly aimed at investigating the degree of awareness of the challenges posed by GenAI and institutional activities to tackle using GenAI (Yusuf et al., 2024; Derakhshan & Ghiasvand, 2024; Ibrahim et al., 2023; Yan, 2024; Kelly et al., 2023). However, the reviewed articles revealed a paucity of research on the capacity of faculty to promote the principles of academic integrity in the context of GenAI. This is evident by the fact that institutional-level analysis, including the perspectives of administrators, curriculum developers, and policymakers, was represented in only six studies, despite their essential role in shaping academic policies and assessment standards.

The underrepresentation of non-student perspectives in the study samples reveals a critical gap in the literature. Adherence to the principles of academic integrity in the context of GenAI is not only a matter of individual student choice but also of institutional culture, assessment design, and the training of academic and administrative staff. The lack of representation of all stakeholders in the study samples and the minimal presence of policymakers in the study samples indicate that the field of research is focused on individual accountability rather than systemic change.

In brief, the synthesis of existing studies on higher education, teaching integrity, and GenAI reveals a discipline that is still in its early stages of development, characterised by short-term, pragmatic designs and student-centric sampling. A range of designs and methods are employed, including experiments, questionnaires, and the evaluation of prompts; however, work is still primarily based on isolated experiences and lacks a systemic perspective. The limited use of longitudinal designs, theory, and the role of institutionally positioned actors demonstrates a considerable omission, indicating that the active, though narrow, research environment requires a greater breadth of and integration among methodological approaches.

Need for longitudinal studies and necessity of guidelines

The analysis of future research recommendations across the reviewed studies shows a growing awareness of the need for more complex, strategic, and systemic investigations

into the relationship between GenAI and academic integrity. The most common future direction – emphasized in over half of the studies – is the call for the development of ethical frameworks that move beyond mere detection and punishment to promote responsible, transparent, and values-driven GenAI use (e.g., Yusuf, et al., 2024; Cotton et al., 2024).

The role of longitudinal research designs in various studies has been highlighted, as short-term cross-sectional studies cannot account for the changing attitudes, practices, and policies toward AI adoption (Evangelista, 2025; Bin-Nashwan et al., 2024).

Several studies suggest the establishment of pragmatic guidelines and best practices to help students and professors ethically incorporate GenAI into their scholarly work (Dai et al., 2023; Derakhshan & Ghiasvand, 2024). These would cover topics such as examples of ethical prompt engineering, citation practices, and task-specific parameters for the acceptable use of GenAI. Another critical future direction is the recommendation to expand research samples to include educators and institutional leaders, in addition to students (Emenike & Emenike, 2024; Ibrahim et al., 2023). Recognising that academic integrity is a shared responsibility, scholars stress the importance of gaining a deeper understanding of how teachers, administrators, and curriculum designers are negotiating the integration of GenAI into higher education. Several studies advocate for further research into GenAI integration designs, proposing frameworks that position GenAI as an integral part of assessment design, mechanisms of feedback, and the development of critical thinking (Fergus et al., 2023; Sallam et al., 2023). Concurrently, an increasing number of scholars are drawing attention to the need for subsequent research to address issues of equity and inclusivity, ensuring that GenAI technology does not exacerbate existing digital divides or inequalities in global education systems. These calls highlight the need for a shift in the research agenda – away from remedial projects addressing proximal problems toward proactive, systemic, and ethically driven research that can address the multifaceted realities of the higher education sector and the emergence of GenAI.

Research Gaps

Analysis of the studied works reveals a common recognition that scholarship on academic integrity and the use of GenAI in higher education remains fragmented and in its early stages of development. Perhaps the most consistently noted shortfall is the scarcity of longitudinal studies. Writers comment that cross-sectional snapshots, although informative, do not account for how perceptions, actions, and institutionally driven responses change over time as GenAI technology is increasingly embedded in the educational process (Evangelista, 2025; Bin-Nashwan et al., 2023). Another significant gap is related to the limited number of cross-institutional and cross-cultural studies. Most research invites inquiries that are broader than single-institution case studies or Western samples, seeking to investigate global differences in the adoption of artificial intelligence, integrity policies, and ethical attitudes (e.g., Yusuf et al., 2024; Ibrahim et al., 2023). Lacking more general comparative data, the possibility that newly emerging policies may be narrow or inequitable in orientation is high.

Multiple authors have identified the intention to incorporate a stronger voice from non-students, including educators, institutional leaders, and policymakers (Derakhshan & Ghiasvand, 2024; Yan, 2024). Students are most significantly impacted by GenAI, and developing ethical norms and academic policymaking requires a systemic approach that involves all these stakeholders. The literature surveyed also identifies a scarcity of work focused on formulating ethical and pedagogical guidelines for integrating GenAI, aside from detecting misconduct (Fergus et al., 2023; Sallam et al., 2023). There is a need for additional work to develop GenAI literacy programs, looking into how students and faculty can be best prepared to handle responsible and productive GenAI applications in learning and research environments.

Lastly, other studies caution that matters of equity and inclusion are underresearched. Current research often overlooks the potential for GenAI-related practices and policies to disproportionately affect vulnerable groups, including non-native speakers of the country's language and students with limited digital access (Derakhshan & Ghiasvand, 2024).

In turn, the proposed gaps suggest that the discipline needs to adopt more systemic, longitudinal, culture-sensitive, and ethically informed research to fully engage with the transformative potential of GenAI for academic integrity.

Discussion

Quantitative methods such as structured surveys, which often include descriptive statistical analysis, are used to assess behaviours and attitudes (Bin-Nashwan et al., 2023; Dai et al., 2023). However, such studies most often do not provide deeper causal analyses. Some of the studies use data triangulation methods and mixed methods, but there are not many such studies. One approach worth mentioning that has developed with the emergence of GenAI is prompt evaluation, which analyses the compliance of AI-generated responses with academic ethical principles. Fergus, Botha, and Ostovar (2023) analyse the academic responses provided by ChatGPT, while Sallam et al. (2023) focus on the quality and appropriateness of ChatGPT-generated responses in health education.

An analysis of the research designs proposed in the selected studies reveals that much of the research is adapted in a cross-disciplinary and exploratory framework that provides only situational insights into the behaviours and perceptions of the moment. In contrast to the variety of research methods, small samples dominate the research. The samples used in the research publications are most often students at the Bachelor's and Master's levels. While such a focus provides important insights into how GenAI are perceived by students, such a narrow focus creates a blind spot that excludes other partners involved in the study process. Few studies analyse lecturers and even fewer analyse the perspectives of administration, programme or policy makers. The analysis of sample sizes showed that most qualitative studies are based on small sample sizes of less than 30 participants. The samples for quantitative research ranged from 60 participants to larger samples of over 1,000 respondents, including both students and teaching staff.

This review shows that research on academic integrity and GenAI in higher education is still developing. The rapid growth in the use of artificial intelligence tools has challenged educators and researchers to rethink what it means to write, create and learn in an academic environment. While many studies provide useful initial insights, the field lacks consistent methods, has limited population coverage and often avoids deeper theoretical or global analysis.

The dominant tendency in the 39 selected studies is towards short-term, practical research designs. Cross-sectional surveys and small-scale experiments are often used, particularly in studies comparing student and AI-generated work or exploring attitudes towards the use of GenAI in academic tasks (Fergus et al., 2023; Sallam et al., 2023). These methods are helpful in responding quickly to emerging issues, yet they often lack the depth and theoretical grounding needed to inform sustainable educational strategies. Only a small subset of research engaged with conceptual models or long-term inquiry, which limits our ability to understand how GenAI is transforming academic norms over time.

Most studies focused on students, especially undergraduates, as the primary research subjects. While this provides insights into student behaviours and attitudes, it risks neglecting other crucial perspectives. Faculty members, institutional leaders, and policy stakeholders were underrepresented, appearing in fewer than 30% of the studies. This imbalance reduces the field's capacity to address academic integrity as a systemic and institutional concern, rather than an individual behavioural issue (Pudasaini et al., 2024). Thematically, the reviewed literature often revolves around the detection of AI-generated content, student misuse, and concerns over plagiarism and authorship. Surveys and questionnaires were used to measure awareness and understanding of the impact of GenAI on assessment and learning (Bin-Nashwan et al., 2023; Kelly et al., 2023). Some studies have also explored how academic integrity is being redefined, with a focus on authorship, originality, and the acceptable use of GenAI. Nevertheless, fewer studies have examined broader pedagogical redesign, ethical reasoning, or values-based approaches to human-AI collaboration in education.

There are also notable contextual and geographical gaps. Most studies rely on data from single institutions and Western educational settings, limiting the global applicability of their findings. This narrow focus risks overlooking how different educational systems and cultural values shape perceptions of GenAI and academic integrity. Research inclusive of non-Western, under-resourced, or multilingual contexts is crucial to building fair and inclusive GenAI policies in education (Dai et al., 2023).

Furthermore, theoretical frameworks are still underused. Only a few studies address deeper questions about what it means to learn, evaluate or think ethically using AI (e.g. Baudrillard, 2001; Macfarlane et al., 2014). Without a solid conceptual grounding, much of the research is descriptive or problem-solving oriented, thus missing opportunities to propose proactive and forward-thinking strategies.

Overall, these findings suggest that future research needs to be more balanced, inclusive and theoretically grounded. Longitudinal and multi-institutional studies are particularly needed to keep up with the evolution of practice and to embrace different academic

cultures. Broader stakeholder engagement – including educators, administrators, and policymakers – would provide a more complete picture of how GenAI is transforming academic norms. Finally, the field must expand its focus from detection and compliance to pedagogical innovation, ethical development, and the creative potential of human-AI partnerships in education.

Conclusion

The emergence of GenAI tools in early 2023 has significantly impacted higher education, raising urgent questions about maintaining academic integrity. As GenAI becomes increasingly accessible to the general public, educators and institutions face new challenges in safeguarding the integrity of educational processes. The ability of GenAI to generate complex texts and content on demand has led to a phenomenon often referred to as “AI-giarism” (Chan, 2023), where students use AI-generated material without proper attribution. This practice not only undermines the fundamental principles of academic honesty but also weakens the development of critical thinking skills, promoting a “copy-paste” culture (Dai et al., 2023).

The problem of academic integrity is further complicated by the inadequacy of traditional assessment methods, which were developed long before the widespread use of GenAI tools. These methods often fail to detect AI-generated content or address the nuanced ethical issues that arise from its use (Evangelista, 2025). Additionally, unclear institutional guidelines regarding the use of GenAI intensify the problem, leaving both students and educators uncertain about what constitutes acceptable practice (Pudasaini et al., 2024).

The significance of examining this issue lies in its potential to disrupt the foundational values of higher education, particularly the commitment to original thought and ethical scholarship. As GenAI technology continues to evolve and integrate into educational settings, it is crucial to reassess how academic integrity is conceptualised and upheld. Despite the growing body of literature addressing the intersection of GenAI and education, comprehensive overviews of the methods and research designs used in this emerging field remain limited. Moreover, there is a clear gap in research concerning cross-cultural perspectives, discipline-specific challenges, and the long-term impacts of GenAI on academic integrity.

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COMPETENCE DEVELOPMENT EXPERIENCES OF PRIMARY SCHOOL TEACHERS IN THE CONTEXT OF INCLUSION

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ABSTRACT

The provision of quality inclusive education is the responsibility of all professionals at schools, particularly the teaching staff of primary education. The increasing diversity in the classroom requires all teachers to care for different pupils' learning needs, namely through the establishment of flexible, adaptable learning environments, including differentiation by using of a variety of teaching methods and learning materials in their classrooms. The most important factor influencing inclusive education is the professional preparation of teachers. Primary teachers must be prepared to care for all learners, regardless of their abilities or needs. This means that teachers need to acquire the competences needed to deliver inclusive education to all pupils. The aim of this study is to reveal the competence development experiences of primary education teachers in the context of inclusion. A qualitative research methodological approach was chosen for the study. 9 informants took part in the study. The analysis of primary school teachers' experiences revealed that the main motives for professional development are personal development and the pursuit of a higher qualification category. Areas of improvement identified by teachers working with inclusion in the future include improving digital competences, personalising education, and leadership in education. Participants shared their experiences and expressed problems with competence development activities that are related to the lack of practical knowledge and skills. The informants identified areas of relevance and requiring professional competence development in the context of inclusion: individual learning needs of children; working with pupils with severe learning difficulties; and the application of digital competences in modelling teaching and learning.

Keywords: *competence development, inclusion, inclusive education, primary education, teachers' experiences*

Introduction

Various international organizations involved in international education policy (UNESCO, United Nations, European Agency for the Development of Special Needs and Inclusive Education, etc.) describe inclusive education as an evolving process aimed

at ensuring quality education for all members of society, recognising and respecting diversity, taking into account the individual abilities and needs of each person, and avoiding discrimination of any kind. It is now recognised that the concept of inclusion should be applied not only to pupils with special educational needs, but also to other learners who may be vulnerable and discriminated against because of their differences. Lithuania, along with other democracies, is implementing the principles of inclusive education by moving from school-for-all to school-for-everyone. On 1 September 2024, amendments to the Law on Education, adopted by the Seimas of the Republic of Lithuania in 2020, entered into force. These amendments are in line with global goals for inclusive education, including UNESCO's Education 2030 programme, the Sustainable Development Agenda, and the United Nations Convention on the Rights of Persons with Disabilities.

The 2018 TALIS (2020) survey showed that Lithuanian teachers had identified important aspects of inclusive education, working in classrooms with pupils of different abilities, teaching in multicultural and multilingual environments among the weakest areas of their professional preparation, and that about one third of teachers find adapting lessons for pupils with individual needs stressful. The development of teachers' competences and potential in the context of inclusive education therefore becomes a relevant area for competence development and the focus of this research. Teachers' competences in relation to inclusive education encompass a wide range of competences needed in inclusive classrooms, ranging from the ability to respond to the challenges posed by increasing socio-cultural diversity in the classroom to specific competences in adapting the curriculum to the individual learning needs of pupils.

The aim of this study is to reveal the experiences of competence development of primary education teachers in the context of inclusion. In order to uncover the problem and the goal, this study used *a qualitative research approach* to explore teachers' experiences of competency development in the context of inclusive education.

Theoretical part

Changing social, economic and cultural contexts, technological and digital advances, global trends, growing climate challenges and demographic trends are increasing society's need to continuously acquire new knowledge, skills, and competences. Education must empower everyone to be adaptable and to become leaders of change. Education embraces the challenge to provide inclusive and equal-quality education for all and to promote lifelong learning. Education is expected to play an important role in the creation of national wealth, promoting personal growth, societal maturity, innovation, and job creation (State Progress Strategy *Lithuania's Vision for the Future – Lithuania 2050*, 2023). The 2015 World Education Forum declared equality of opportunity, non-discrimination and inclusion as key challenges for the future of education (UNESCO, 2024). This future direction for education was further reinforced by the United Nations General Assembly resolution adopted in the same year, *Changing our world: the 2030 Agenda for Sustainable*

Development (A/RES/70/1, 2015), which covers the social, economic and environmental spheres of life, from gender equality to quality education, responsible consumption and production, and the preservation of life on Earth. Miltenienė, Kaffemanienė, Melienė, Kairienė, Geležinienė & Tomėnienė (2020), discussing the vision of sustainable development, argue that the world of future can be described as one in which universal respect for human rights and human dignity, equality and non-discrimination are embedded. And equal opportunities, so that human potential can be fully realised and contribute to shared prosperity. It is a just, equitable, tolerant, open and socially inclusive world where the needs of the most vulnerable are met. The development of inclusive education requires the right educational policy, school perspective and methodological and organisational support for teachers (*Lithuania. Education in the country and regions. Inclusive education*, 2022).

Inclusion in education with changes in teachers' competences is discussed in the works of a number of researchers (Miltenienė et al., 2020; Auškelis et al., 2022; Rizalie & Basuki, 2022; Galkienė, Monkevičienė, 2023), pointing to the importance of teachers' competences. Other authors draw attention to the importance of cooperation between teachers and the wider school community (Wahyuningsih et al., 2020; Meier & Rossi, 2020; Galkiene, 2021; Braslauskiene & Ramanauskiene, 2023). According to Auškelis et al. (2022), the implementation of the principle of inclusion is discussed not only at national level but also at school level, emphasising the importance of personalised, individualised education and teaching, recognising that people have different experiences, needs and aspirations and learn at different paces and in different ways.

Miltenienė et al. (2020) point out that inclusive education is a continuous process of school change and improvement that never reaches a final level of perfection. Creating an inclusive environment is about ensuring that every child has access to quality education alongside their peers in the community closest to their home. This obliges schools to continuously monitor the quality of education and to improve their readiness to welcome all pupils, regardless of individual characteristics, barriers or difficulties, and to strive to ensure effective education. Milteniene et al. (2020), referring to Ainscow et al., identified three necessary conditions for quality inclusive education: inclusion, participation and achievement (see Figure 1).



Figure 1 Conditions for inclusive education (Miltenienė et al., 2020, p. 58)

Miltenienė et al. (2020), discussing the model for implementing change in schools, emphasise the importance of adhering to the following principles in order to bring about the change in practice:

- Ensuring responsible and shared leadership to build a culture, policy and practice of inclusive education at all levels and in all school settings: in the classroom, with parents, in informal activities, in staff meetings, etc.;
- Takes a holistic approach to people and education, where the aim is to get to know each pupil, identify their abilities and use them to unlock their personal potential, personalising education;
- Ensure the accessibility of information and physical environments;
- To create a learning environment where everyone feels safe, accepted, supported and encouraged to learn and express themselves;
- To differentiate, individualise and personalise education; to support each pupil according to their individual needs; to enable teachers to develop their competence in inclusive education and to learn from each other through collaboration and problem solving;
- Ensuring that the necessary resources are available and managed efficiently.

In practice, these principles and processes of inclusive education are stronger at the school level than at the level of individual teachers, as shown in the *Thematic external evaluation report on the implementation of inclusive education in schools implementing general education programmes* (2022). Schools often declare a culture and attitudes towards inclusive education, but these processes are not observed in everyday educational practice. Leadership and management are valued more than pedagogy and pupils' experiences. Schools are better at mobilising the community, collaborating and negotiating the direction of inclusive education, but these agreements are only partially implemented in the day-to-day organisation of inclusive education. According to Deniz & Ilik (2021), teachers are expected to be able to respond to the different needs of children in their classrooms and to support the development of children of all levels and needs. For this reason, teachers need to have professional knowledge and skills related to integration as well as subject knowledge. If teachers do not have the professional knowledge and skills related to inclusion, authors believe that negative attitudes towards pupils with inclusive needs can be observed. This situation also has a negative impact on the attitudes pupils of typical development towards inclusive pupils (Deniz et al., 2021). In practical educational activities related to inclusion processes, teachers should perform many tasks, for example, to know the principles of inclusive education, to be able to apply them to included pupils, to recognise the cognitive, emotional and physical characteristics of persons with special needs, as well as to determine the needs of persons with special needs, to develop individual educational programmes, to apply them, etc. As Makhambetova & Magauova (2023) argue, in order to adequately and timely prepare teachers to deliver inclusive education, education systems should commit to mentoring new teachers and ensuring continuous and appropriate professional development. There should also be a concerted and systematic effort by universities and education systems to ensure

a coherent transition from teacher training to competent and effectively trained inclusive educators. Makhambetova & Magauova (2023) state that in order to adequately and timely prepare teachers to deliver inclusive education, education systems should commit to mentoring new teachers and ensuring continuous and appropriate professional development. Moreover, universities and education systems should make joint and systematic efforts to ensure a coherent transition from teacher training to competent and effectively trained inclusive education teachers.

The teacher could contribute to an inclusive culture at school in a number of ways, for example: the teacher contributes to the success of all pupils; the teacher creates a supportive and inclusive learning environment where pupils are valued as integral members of the classroom community and where positive collaboration is paramount; the teacher takes responsibility for ensuring that the classroom meets the needs of all pupils; the teacher creates an effective learning environment; the teacher contributes to pupils' learning needs through innovative teaching and learning strategies (Somma, Bennett Brock, 2020; Bolat, Kiyak, 2024). To fulfil this role, the teacher needs to have good intentions and knowledge of the teaching practices that promote inclusive education by integrating inclusive practices into classroom activities. In inclusive education, the teacher's role is not limited to day-to-day activities, as he or she can contribute to educational innovation through the development of new pedagogical strategies and action research, as well as through the identification of resources to support inclusive education. Włodarczyk, Somma, Bennett, Gallagher (2015) note that inclusive educators play a key role in meeting the expectations and needs of learners through a wide range of innovative teaching and learning strategies. In this context, teacher development, learning and competence development activities can be identified as actions.

Juškevičienė, Jevsikova, Stupurienė & Vinikienė (2024) show that teachers' personal and psychological factors, as well as their perceptions of working conditions at school, can have a significant impact on their motivation to engage in professional learning activities. These authors identify seven categories of teachers' motivation for learning: (1) to influence pupils and their learning; (2) to learn with and/or from other teachers; (3) to become a *better* teacher; (4) to meet professional competence requirements; (5) to continuously strive to learn and engage in learning as a *habit*; (6) to gain knowledge on topics of interest to teachers; and (7) to continue learning given the means, time and resources. Rizalie & Basuki (2022) point out common problems in teacher development activities where teachers have not yet assimilated scientific and technological advances. There are still many teachers who just follow the curriculum, and teachers lack creativity to innovate in learning activities, learning methods and strategies, teaching materials and new models of learning relationships that are in line with the contemporary features of inclusive education. According to the above-mentioned authors, teachers' performance is still sub-optimal, inclusive education practices are still in their infancy, but the results of teachers' performance are felt by pupils and parents, and teachers are always required to improve their performance in order to achieve a better educational process.

Methodology

A qualitative research method was chosen to explore the experiences of primary school teachers about the possibilities of competence development (Creswell, 2014; Žydžiūnaitė, Sabaliauskas, 2017). The research was based on the concept of inclusion as highlighted by Booth, Ainscow (2002), Soriano, Watkins, Ebersold (2017), which emphasises that teachers' preparation for inclusive education is related to personal and professional aspects and the conditions created by the educational institution to prepare for this process. These provisions were adapted to provide an interpretative, holistic view of the situation under analysis. The semi-structured interview method was chosen to answer the question of what are the competence development experiences of primary teachers' in the context of inclusion. In planning the research questions, three themes were identified: 1) motives for professional development; 2) areas of teacher development in the context of inclusion; 3) challenges in competence development activities.

The survey was conducted in June 2024. A purposive, criterion-based sample of participants was used. The main criterion was primary school teachers.

Participants of the study. 9 primary school teachers of Klaipėda city agreed to participate in the study. Demographic characteristics of the participants: all the participants were women, with an average age of 53 years and an average teaching experience of 28 years. Of these, six were teachers methodologists and two were expert teachers.

Qualitative content analysis was used to process the data. The main purpose of qualitative content analysis is to reveal the main aspects of the phenomenon under study (Žydžiūnaitė, Tauginienė, 2017). Content analysis enables qualitative and reasonable conclusions to be drawn after an objective and systematic analysis of the textual features (Kardelis, 2016). In this study, a three-stage data analysis sequence was used: 1) reading the transcripts and annotating the notes; 2) initial coding of the data, which involved generating categories without limiting the number of categories; and 3) combining the categories extracted in the second stage, noting recurring ideas and themes that emerged in different groups (Nyumba, et al., 2018).

Study validity and reliability. In order to ensure the validity of the study, an environment of trust was created between the researcher and the study participants. It was made clear to the participants that the information they provided was confidential (informants were coded with an alphanumeric code, e.g., P1, P2, P3, etc.). It was also ensured that clear and understandable questions were asked during the interviews.

Research ethics refers to the moral principles that should guide the conduct of research, both in the preparation of the research and until the results are published. According to researchers (Žydžiūnaitė, Sabaliauskas, 2017), ethical behaviour of the researcher makes the research results of higher quality. In this study, the principles of respect for personal privacy, confidentiality, anonymity and fairness were applied.

Results

A qualitative content analysis method was used to analyse the responses, using open-ended questions to elicit informants' experiences. Professional development for primary school teachers is a prerequisite for quality education, better pupil outcomes and an inclusive learning environment. An analysis of informants' responses to the first question about their motives for professional development led to the identification of the subcategories (see Table 1).

The survey findings reveal the main motives of the informants for upgrading their qualifications, which can be divided into two main groups: 1) internal – to improve personal professional competences (*“It’s important for me to improve”*; *“I want to improve”*), and 2) external – to obtain a higher qualification (*“I’m improving my skills because I’m going to take part in an attestation”*; *“I want to improve”*; *“It is relevant for my career”*). The results of the study showed that primary school teachers also perceive their profession as constantly changing, requiring constant adaptation to the ongoing changes in education, and that professional development is a prerequisite for maintaining a quality educational process. This is illustrated by the responses of the informants: *“To respond to change and innovation”*, *“To strive for quality teaching”*. While professional development for primary teachers should be related to improving the educational process, the findings of the study show that material incentives and career aspirations are also important. One informant indicated that the possibility of higher pay was their main motivation, while a significant number of participants in the study indicated that they were aiming for a higher level of qualification. This suggests that while extrinsic motives are often not the main motivator, they are still an important incentive, particularly when it comes to meeting teachers' needs for continuing professional development. One informant's response suggests that professional development is an individual process related to personal goals and values: *“The decision to upgrade is personal and depends on individual needs and goals”*. This response suggests that primary teachers are driven by intrinsic motivation, stemming

Table 1 Teachers' motives for professional development

Category	Subcategory	Supporting statements
Motivations for upgrading qualifications	Personal competence development	“... it’s important for me to improve ...” (P3); “I seek personal development ...” (P7); “Continuous improvement is essential for me as a person ...” (P1), “The decision to upgrade my qualifications is personal and depends on my individual needs and goals” (P8).
	Pursuing a higher qualification	“... I’m improving my skills because I’m going to take part in an attestation ...” (P5); “I want a higher qualification” (P6); “It is relevant for my career” (P9); “It is important for me to upgrade my qualifications” (P2).
	Striving for quality education	“Responding to change and innovation ...” (P2), “... strive for quality teaching” (P1).
	The extrinsic incentive motive	“Motivated by higher pay” (P4).

from an internal desire to improve, rather than external incentives or qualification requirements. Thus, it can be said that primary teachers' motives for professional development are diverse, both internal (improving personal competence, striving for quality of education) and external (career, remuneration). This diversity shows that primary teachers' motivation cannot be understood in a one-sided way: it is shaped by the context of educational change as well as by teachers' individual goals, values and experiences.

The following sub-categories were identified in the analysis on participants' responses to the question which areas of professional development contribute to the implementation of inclusive education (see Table 2).

The analysis of the training experiences of primary school teachers revealed that the informants were seeking to improve their qualifications in the field of inclusive education. Informants highlighted the practical applicability of digital, personalisation and leadership skills in their daily work. The findings show that digital technologies can help to plan and deliver lessons, adapt content for pupils of different abilities, create personalised learning content and practical tasks. This is illustrated by their responses: "... *I create digital content*", "*ICT is important to make lessons interesting and engaging*". The use of digital tools allows more flexibility in the organisation of the teaching/learning process. The informants stated that they would like to learn how to use virtual platforms, video tools, interactive tasks and games in their teaching. This is illustrated by one of the responses of the study participants: "... *using digital tools in teaching: apps, interactive platforms, video material, artificial intelligence and games would help me to meet different needs of pupils*".

Table 2 Areas of professional development identified by informants as contributing to inclusion

Category	Subcategory	Supporting statements
Areas of professional development	Digital competences	"It is important to develop my ICT skills ... using digital tools in my teaching: apps, interactive platforms, videos, artificial intelligence, games, to help me meet different needs of my pupils" (P4); "... creating digital content" (P9); "ICT is important to make lessons interesting and engaging ..." (P2).
	Personalisation of education	"I would like to gain knowledge about adapting teaching materials to pupils' abilities" (P1); "To help me adapt education to pupils with different abilities" (P7); "... to gain knowledge about personalising the learning content to help pupils overcome barriers to learning." (P6).
	Leadership	"I would like to know more about teacher leadership, collaboration skills" (P3); "I need to be a leader and inspire pupils, promote pupil's leadership" (P5); "... to develop self-confidence, ... to be a leader. ... to share best practices, to be a leader in a team" (P8); "The leadership skills I will acquire will help me motivate others ... will give pupils more responsibility, make them more active, more respectful of each other, which will increase cooperation in the classroom and reduce bullying" (P2).

This shows that in order to improve digital literacy, informants strive to create an inclusive learning environment for every pupil.

Individualisation is one of the main strategies for implementing inclusive education. Informants state that they need to “... *acquire knowledge on how to adapt teaching materials to pupils’ abilities*”; “... *adapt education to pupils with different abilities*”, “... *so that pupils can overcome learning barriers more easily*”. This shows that the informants understand that inclusive education and individualisation are closely related, respond to the needs of each pupil and create conditions for successful learning, therefore they emphasised the need to improve the competences of individualisation.

The analysis of the research findings shows that the informants perceive improving leadership skills as an important part of implementing inclusion. The research participants emphasised the need to acquire knowledge and skills to initiate change, to share experiences and to work in teams. This is illustrated by the informants’ responses: “*I would like to know more about the teacher leadership, collaboration skills*”; “... *to be a leader and inspire pupils*”; “... *to develop self-confidence, to share good practice, leadership in a team*”. The informants also emphasise that the acquired knowledge and skills of leadership will help to “... *promote pupil’s leadership ...*”, “... *give pupils more responsibility, they will be more active, they will respect each other more, which will strengthen cooperation in the classroom and reduce bullying*”. This shows that improving leadership skills helps informants to create an open, inclusive and collaborative learning culture, to initiate change and to share good practice. Thus, it can be argued that improving the skills of digital technologies, personalised education and leadership will help primary school teachers to address inclusion challenges more effectively: to develop personalised learning content, to use innovative digital learning strategies and to create an enabling learning environment for all pupils, taking into account their individual abilities and needs.

The participants of the study shared their experiences and expressed the emerging problems in implementing inclusion in competence development events. The following subcategories were identified in the responses of the analysed informants (see Table 3).

The analysis of the research results shows that one of the most important problems that primary school teachers experience when attending professional development events is insufficient transfer of knowledge and skills necessary to meet the challenges of inclusion. The participants in the study stated that they lacked “... *more ... practical seminars*”; “... *practical advice and methods in the education of pupils with special needs*”; “... *practical application of educational programmes*”; “... *more practical knowledge about the possibilities of recognising different needs*”. These responses show that professional development events are dominated by theoretical content which does not meet the needs of teachers’ practical work. Consequently, one of the main obstacles to the implementation of inclusion is insufficient orientation of professional development events for primary school teachers to real, practical pedagogical situations.

For the successful implementation of inclusion, primary school teachers need not only to know which learning methods are required to create an inclusive environment, but also to be able to apply these methods in the teaching/learning process. This is evidenced

Table 3 Problems related to implementing inclusion in skills development events

Category	Subcategory	Supporting statements
Problems related to implementing inclusion in skills development events	Lacking practical knowledge and skills	“... more practical seminars would be needed” (P8); “... practical advice and methods for educating pupils with intellectual disabilities” (P4); “How to apply educational programmes practically” (P2); “... I would like to have more practical knowledge about the possibilities of recognising different needs” (P9).
	Lacking diversity in teaching/learning methods	“How to use different teaching strategies to make lessons inclusive” (P5); “The variety of methods used in modern schools with specific examples” (P2); “... methods for working effectively with support professionals” (P4).
	Difficulties in applying the principles of integration	“... what is most lacking is help and prepared tools, learning materials on how to work with pupils with special needs” (P1); “Practical seminars with solutions to specific inclusion problems” (P7); “... presented in a very abstract way, lacking specificity” (P6); “We listen to a seminar on inclusion, but when we have to write an adapted task for a child with special needs – I don’t know where to start” (P9).

by the responses of the informants: *“The variety of methods used in modern schools with specific examples”, “How to implement different teaching strategies to make lessons inclusive”, “... methods for effective cooperation with support specialist”*. This leads us to believe that it is important that in-service training not only presents the methods recommended for inclusion, but also their practical applicability in order to help teachers to integrate these methods effectively into the teaching/learning process.

The lack of practical knowledge was revealed in the training sessions analysing the implementation of inclusion principles in the teaching/learning process. The study participants indicated that they lacked specific tools, an analysis of real teaching/learning situations and methods to solve them in the trainings related to the implementation of inclusion. This is illustrated by the responses of the informants: *“... above all, there is a lack of help and prepared tools, learning materials on how to work with pupils with special needs”; “practical seminars with solutions to specific inclusion problems”*, which confirm that relevant problems are not properly examined in the trainings. This shows that the trainings do not pay enough attention to practical cases of inclusion and methods of analysing possible solutions in the real teaching/learning process. Thus, we can state that the challenges of implementing inclusion that primary school teachers face in the teaching/learning process are related to the delivery of the teaching/learning content of professional development events, which must not be overloaded with theoretical knowledge, but rather include more practical knowledge and skills.

During the study, informants were asked to identify the areas of professional development that were relevant and necessary to them in the context of inclusion. After summarising informants’ responses to this question, the identified subcategories were the following (see Table 4).

Table 4 Areas of professional development mentioned by informants when implementing inclusive education

Category	Subcategory	Supporting statements
Professional development areas	Pupils' individual learning needs	"... the competence to identify and assess the individual needs of pupils..." (P8); "... how to successfully involve pupils with special needs in the educational process" (P3); "... how to meet the learning needs of each pupil" (P1); "... how to plan lessons so that all pupils are involved and motivated" (P5).
	Working with pupils with severe learning difficulties	"How to work with pupils with severe learning difficulties" (P4); "I don't think I have enough competences to work with pupils with severe learning difficulties" (P9); "How to apply different teaching methods to children with ASD" (P7); "There is a lack of tools to work with pupils with behavioural and emotional difficulties" (P6); "Help is needed to work in a classroom where there are several children with different needs" (P1).
	Applying digital competencies in modelling learning	"... how to differentiate the use of digital tools in the classroom according to the individual needs of pupils, their specificities..." (P5); "There is a lack of knowledge on how to integrate digital tools into teaching, creating attractive and effective educational content for pupils" (P2); "How to involve less motivated pupils in learning through digital tools" (P8)

The analysis of the research findings revealed the main areas of professional development identified by the informants as essential for the successful implementation of the principles of inclusive education. These areas are: individual learning needs of pupils; working with pupils with significant learning difficulties; applying digital literacy in modelling teaching/learning. They are supported by the research participants' statements, which reveal the targeted need for teachers' professional development.

Informants emphasised that the ability to identify and assess the learning needs of individual pupils is essential for the successful application of the principles of inclusive education in the classroom. Participants in the study stated that it was very important to develop "... the competence to identify and assess the needs of individual pupils ..."; to acquire knowledge and skills "... how to successfully include pupils with special educational needs in the educational process", "... how to respond to the learning needs of each pupil"; "... how to plan lessons so that all pupils are involved and motivated". These informants' responses show the desire of primary school teachers to improve competences that would help them to recognise the diversity of learners and to adapt the teaching/learning process according to their needs. Another important area – working with pupils with severe learning difficulties – reveals the lack of knowledge and practical skills of the research participants in this area. This is illustrated by the statements of the informants. They seek to acquire the competencies of "... how to work with pupils with severe learning difficulties" They seek to acquire the competencies of "... how to work with pupils with severe learning difficulties" and they admit that they have not acquired such competences by stating that

“... I do not have sufficient competencies to work with pupils with severe learning difficulties”. The informants also revealed the need to receive methodological recommendations and practical examples on *“How to apply various teaching methods to children with ASD”*; *“There is a lack of tools for working with pupils with behavioural and emotional difficulties”*; *“Help is needed on how to work in a classroom where there are several children with different needs”*. This shows the real need for professional development of primary school teachers to deepen their knowledge in the areas of support strategies, differentiation and individualisation of education. The third area identified by the informants – the use of digital competences in modelling teaching/learning – reveals the lack of knowledge and practical skills of teachers in using modern digital tools for inclusive education. According to the informants, they lack the competences of *“... how to differentiate the use of digital tools in the classroom according to the individual needs of the pupils...”*; *“... how to integrate digital tools in the classroom and create attractive and effective educational content for pupils with special needs”*; *“... how to use digital tools to involve pupils who are less motivated to learn”*. These statements indicate that digital literacy has not yet been fully mastered by primary school teachers in creating flexible and inclusive teaching/learning environments for all pupils. In conclusion, the research data revealed the need for primary school teachers to continuously improve their professional competences in relation to inclusive education practice, especially in identifying individual pupils’ learning needs, methods of working with pupils with learning difficulties and the use of digital tools in differentiated and individualised education.

Discussion and Conclusions

The development of teachers’ competences is an ongoing and relevant issue in the context of the implementation of inclusive education. It determines the scope and quality of inclusive education. It is important that teachers have a positive attitude towards the development of their professional competences, as this is the only way to ensure the inclusion of each pupil in learning at the appropriate level and to ensure the individual success of each pupil.

Miltenienė et al. (2020), when discussing a model for implementing change in schools, stress the importance of providing opportunities for primary school teachers to develop their professional competences. According to Makhambetova & Magauova (2023), it is important to ensure continuous and adequate professional development in order to prepare teachers to provide inclusive education in a timely and appropriate manner. The experience of the participants in this study showed that professional development is very important to them and the primary school teachers in the study are quite active in competence development activities. The findings of the study showed that the motives for upgrading are both intrinsic and extrinsic. The informants’ motives for upgrading their competences are personal growth and the enhancement of their professional competences. External motives such as career opportunities, certification, rewards for work are also important. This shows that the professional development of primary school

teachers is a complex phenomenon, determined by both the educational context and individual needs.

Primary teachers identified the development of digital, personalisation and leadership skills as important for implementing inclusion in the teaching/learning process. The study showed that these areas are key to creating an inclusive teaching/learning process. The informants aim to develop competences in the use of digital tools, personalised content for learners of different abilities and the leadership skills needed to initiate change and foster collaboration. S. Deniz & S. S. İlik (2021) emphasise that in teachers' professional activities related to inclusion processes, it is relevant for teachers to know the principles of inclusive education, to be able to apply them to inclusive students, to recognise the cognitive, emotional and physical qualities of individual children with disabilities, to identify the needs of these students, to develop an individualised curriculum and to use modern information and interactive tools.

In order to create effective and inclusive learning environments that meet the individual learning needs of students, it is important for the teacher to have not only theoretical but also practical knowledge (Somma & Bennett Brock, 2020; Bolat & Kiyak, 2024). Research shows that the main challenges faced by primary teachers in inclusive education contexts are related to a lack of practical knowledge and skills. The theoretical content of the prevailing in-service training events often does not meet the actual pedagogical needs of the informants. Participants in the study lacked concrete methods, tools and case studies to help them work with pupils with different needs. The content of professional development, according to participants, is required to be based on the principles of inclusive education and respond to the diversity of learners. Participants highlighted the need to improve their knowledge and practical skills in identifying the needs of individual pupils, differentiating and individualising work with pupils with severe learning difficulties, and modelling teaching and learning using digital tools. This suggests that the successful integration of inclusive education requires the continuous development of professional competences based on practice and focused on engaging and motivating pupils.

Primary teachers working in inclusive education settings play a key role in meeting the expectations and needs of learners through a wide range of innovative teaching and learning strategies. In this context, teacher development, learning and capacity building activities can be described as the actual (Włodarczyk et al., 2015). The findings of the study revealed that the success of teachers' professional development depends on responding to teachers' needs and providing targeted support in the context of educational change. Informants see themselves as active agents of change in the teaching/learning process in the context of inclusive education. However, primary teachers need targeted, coherent and practice-oriented support to develop competences in line with the principles of inclusive education and to create a high quality, flexible and inclusive learning environment for each pupil.

The limitation of qualitative research is related to the inevitable subjectivity of qualitative research. Although the following research has been planned and carried out in accordance with the requirements for this type of research, the generalisability of

the findings and the possibilities for their application are partly limited by the small number of research participants. It is the results of qualitative research that are unique and specific to the individuals involved in the research. Whilst it would be incorrect to generalise the findings of the study to all primary teachers, it is likely that the views expressed by the participants in this study provide an insight into the challenges and opportunities teachers face in relation to teacher professional development. The findings of the study suggest the need for further research into this phenomenon, involving general education teachers, educational support professionals, administrators and quantitative research.

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GENERAL TENDENCIES OF THE INTERFACE DESIGN: ANTWERPEN'S CASE

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ABSTRACT

This paper summarises the main topics and discussions of *Smashing Conference Antwerp 2024*, with a focus on contemporary tendencies in UI and UX design, including design systems, inclusive practices, data visualisation, and the integration of generative AI. It highlights both practical industry cases and broader philosophical reflections, emphasising the convergence of technology, creativity, and human-centred values.

Keywords: AI, creativity, design systems, innovation, interface, UX, UI

Introduction

Smashing Conference Antwerp 2024 took place from 27 to 31 October in Antwerpen, Belgium, at the famous *Bourla* Theatre, bringing together around 500 designers and developers for a multi-day series of presentations and workshops focused on real-world design challenges (<https://smashingconf.com/antwerp-2024/>). The event offers a concentrated snapshot of current practice in UI/UX and serves here as the primary basis for identifying tendencies.

Methodology

This article is a conference report based on: on-site observations and notes; a review of the official program and speaker materials; a study of publicly available artifacts (speaker sheets, slides, and published videos) and books, websites, and other materials related to IT, design, and other related industries.

Discussion

The conference focused on solving real design problems and the latest trends in user experience design. The conference programme covered various aspects: design systems, usability, inclusive design, UX research, product design, enterprise UX and many more.

Special emphasis was also put on new, less explored areas, from seniors and eco-friendly design to remote collaboration and user privacy. The common message that ran through much of the talks was that design must be human-centred, ethical and adaptable to changing technologies. Workshops were held alongside the presentations to provide in-depth training in specific skills (e.g., design systems planning or user interface design). The special atmosphere of *SmashingConf* should also be highlighted – “It was the most thoughtful, welcoming and warm design conference I have been to in a long time,” said designer Fabricio Teixeira, highlighting the special atmosphere created by the *Smashing* team. This positive, enthusiastic backdrop clearly encouraged creative ideas and open discussion, which are critical for the development of the industry. The conference highlighted a number of current trends in graphical user interface (UI) and user experience (UX) design that reflect broader industry changes.

Design systems – centralised collections of styles and components that ensure consistency across large products – continue to grow in importance. Several speakers (e.g., Nathan Curtis and Cameron Worboys) stressed that it is becoming increasingly important for organisations not only to create a design system, but also to manage and develop it effectively. This includes aligning processes, tools and roles between designers and developers. The trend shows that the maintenance of design systems is becoming a separate competency (called Design Operations or Design Processes). In parallel, the closer integration of designers and developers in their daily work is becoming more important. Christine Vallauré’s talk on the interaction between *Figma* and CSS (When Figma meets CSS, YouTube.) highlighted that the line between design and coding is gradually blurring – modern tools (such as *Figma* with its new plugins and *Dev Mode*) allow both sides to work in a common environment and reduce the traditional “PSD to code” type of handover problem. In industry practice, this means that designers increasingly have basic programming knowledge, while developers value design principles, creating true interdisciplinary teamwork.

It is fair to say that remote and hybrid working has become the norm due to the COVID-19 pandemic, and design teams are looking for ways to remain creative and productive in such conditions. At the conference, Di Scarano stressed that facilitation skills – the ability to lead team discussions and co-creation sessions – are now golden (Facilitation Tools for Everyday Productivity. YouTube). Techniques such as short, structured online team exercises can replace long, ineffective meetings. The industry trend shows a demand for tools that facilitate real-time collaboration, writing down ideas and prototyping remotely (e.g., Miro digital whiteboards, *FigJam*, etc.). Even traditional conferences (like *SmashingConf*) are taking this into account – e.g., suggestions and documentation were shared online (*Google Doc* notes, *Slack* group) to involve remote participants. Another trend is the focus of companies on documenting knowledge – design guidelines, research findings and best practices are stored on shared platforms so that team members, regardless of location, can learn and follow common standards.

In 2024, the importance of inclusive design in UX continued to gain ground. This means designing products to be usable by the widest possible range of people – of different

ages, abilities and cultures. At the conference, the engaging and very attractive designer Pablo Stanley, who presented in socks on stage, gave a practical and vivid demonstration of representing diversity in visuals with AI.

More broadly, companies are focusing on accessibility standards: colour contrast, navigation with assistive technologies, clarity of content. Increasingly, teams are consulting accessibility experts and testing products with people with disabilities to ensure that digital design does not exclude anyone. In addition, there is interest in design for an ageing population (e.g. adapting fonts and interfaces for seniors) and eco-friendly design – such as energy-efficient app solutions and the use of sustainable materials in physical interfaces. These areas were also mentioned by the *SmashingConf* programme as new areas of research. Although these topics are still gaining traction, they reflect the trend towards value-based innovation – designers want to create solutions that are not only functional, but also socially responsible.

In Privacy and ethics UX design There are increasing demands from users and legislators for data privacy and ethical practices in digital products. For UX designers, this means thinking carefully about how personal information is requested and used, and communicating this clearly to users. This topic was not the focus of a separate talk at the conference, but was highlighted as “uncharted territory” in the programme submissions. Current examples in the sector include ‘Privacy UX’ – design that helps users understand and manage their data (e.g., easy to find privacy settings, transparent explanations of cookies). Companies are also starting to move away from dark patterns (manipulative design techniques) and look for ethical alternatives to retain users. This trend is part of a broader focus on user trust – good UX now includes not only usability, but also an ethical responsibility towards the user.

With the explosion of data accessibility in the early 21st century, data design has become an important part of UX. Nick Desbarat’s presentation showed that creating quality data visualisations requires a careful approach – designers need to think not only about the graphical form, but also about the story the data is telling (How to Create Truly Great Charts. YouTube). The trend is for companies to increasingly invest in specialised data designers or train UX designers in data representation requirements. The aim is to turn complex analytics data into user-friendly, visually appealing reports and dashboards. This also means using new tools, from interactive chart libraries to no-code data analysis platforms. Data storytelling skills are becoming as important as technical skills: designers need to be able to contextualise the numbers and highlight the key message the user should get from the data. This trend is in line with a broader trend in UX: the emergence of deeper specialisations (e.g., content designers, conversation designers, data visualisation designers, etc.) that work together to create a unified user experience.

Overall, the UI/UX field is currently undergoing dynamic change, driven by both rapid technological developments and increasing user demands. Designers need to learn new skills (from facilitation to basic programming), collaborate more closely with other disciplines, while keeping human needs and ethics as the central guiding principles. The *SmashingConf 2024* speeches and discussions showed that industry professionals

are ready for these changes – sharing tools, techniques and ideas on how to design better in today’s changing environment.

One of the hottest and fastest growing trends in design technology is the use of generative artificial intelligence (AI) to create images. Tools such as *Midjourney*, *DALL-E* and *Stable Diffusion* have in recent years become capable of creating visual works of art in a matter of seconds using only text descriptions. In 2023–2024, they have reached a new level of quality: for example, OpenAI’s *DALL-E3* is able to generate more detailed and semantically accurate images than its predecessors, and has been integrated into online conversational platforms, making access even more convenient. The magic of these tools lies in their simplicity: any user, by entering a text command, can create an image with an astonishing level of realism and style as designer Gleb Kuznetsov describes, AI-generated artworks have become so common on the internet that one wonders: will AI replace designers in the future? This question was heard both at the conference (in Pablo Stanley’s speech) and in the wider industry, but the prevailing view is that there is a transformation of roles rather than a direct replacement.

Integrating AI into the design process is becoming the new normal. Designers are increasingly using tools like *Midjourney* or *Adobe Firefly* to quickly generate idea sketches, concept art and illustrations. For example, in the early stages of product design, a team can create dozens of visual style directions using *Midjourney* and then select the most appropriate one, saving weeks that would previously have been spent drawing manually. *Adobe* has introduced *Generative Fill* and similar AI functionality into its tools (*Photoshop*, *Illustrator*), making the process of correcting and updating generated graphics part of the daily workflow. This means that a designer can insert a text command to add missing elements or delete unwanted objects to a photo, and the AI does it automatically, maintaining a photorealistic quality. Other tools, such as *Canva*, also offer *Magic Design* features that generate visual designs based on user input. This integration makes generative AI accessible not only to specialised technicians, but to any designer, even without programming knowledge (Canva. 2023, Introducing Magic Studio: the power of AI, all in one place). Another, less discussed issue that did not appear at the conference is that of collective taste, as it remains an open question whether any person without an artistic background can adequately appreciate and appreciate AI-generated art.

SmashingConf speakers highlighted several specific applications of AI image generation in design. Pablo Stanley] demonstrated how to train an AI tool to generate images that match a brand’s visual identity (Creating Beautiful, On-Brand Photography with AI. YouTube.) – for example, a certain colour palette, angles and, most importantly, inclusive content (diversity of people in images). This is extremely useful for marketing and product illustration where coherent visuals are needed: AI can quickly generate a whole library of photographs that look as if the company had held a professional photo shoot with models of different profiles. Examples like these show that AI image generation is not just a technological novelty, but a practical tool in the hands of designers. It allows both to save resources (less outsourcing to illustrators or photographers) and to experiment with a wide range of ideas in minimal time.

But alongside the opportunities, AI also brings new challenges. In addition to the artistic taste mentioned above, one of them is prompt engineering – the ability to formulate a textual request to an AI system in such a way as to get the desired result. Designers have to learn how to describe the desired image precisely, how to apply parameters (styles, camera lenses, lights, etc.) to control the outcome. For example, to create “a friendly, illustrative background for a bank mobile app with a family using a smartphone in a park, flat design style”, an experienced user will know how to structure the team to include both the content details and the desired graphic style. This even creates a new sub-field of design – AI content curation – that manages these tools. Other challenges relate to ethics: the bias and quality of AI-generated images need to be addressed. Models are trained on huge amounts of data, and if they contain biases (e.g., stereotypical gender or racial representations), these can show up in the results. This is why Stanley’s example of deliberately including diversity is important – designers need to be able to correct the AI’s tendency to generate an ‘average’ or default version and encourage the tool to generate more diverse content.

One of the most sensitive questions for the industry is: will AI replace designers? The current perception is that AI will become a strong collaborator rather than a competitor. As industry commentators write, “AI will not replace designers, but designers who use AI will replace those who do not”. In other words, professionals who learn AI tools and integrate them into their design process will gain a significant advantage in the labour market. But those who ignore the technology risk being left behind. The designer’s role is transforming: less time spent on execution (e.g., drawing pixels or creating iterations) and more on conceptual work, monitoring and curating results. Gleb Kuznetsov foresees that in the near future a designer will be able to “go from idea to finished work in minutes instead of days”, becoming a visionary who tells the computer what to design and the computer does the rest. This vision is already partly coming true: AI tools really do allow the focus to be on giving creative guidance while technical execution is automated.

In conclusion, AI image generation technologies are significantly expanding designers’ creative tools. *Midjourney* and similar services can produce an amazing range of visuals, Adobe and others are integrating AI into existing design tools, and overall, the line between “computer-generated” and “human-made” graphics is becoming increasingly fluid. The key challenge for designers now is to learn how to work with AI to make it work for them. The *Smashing Conference Antwerp 2024* showed that the industry is actively seeking best practices in this area, sharing both the excitement about the potential of AI and warning about new responsibilities (ethics, not losing the human element). AI is becoming part of the design process and a successful designer is no longer just a creative artist, but to some extent a technology conductor who can match human ingenuity with machine power. This was also the theme of Harrison Wheeler’s (Design Director at LinkedIn) final keynote, *Design’s New Frontier: How to Lead in the AI Disruption*, that AI is changing almost every aspect of the field and designers need to adapt to these changes to avoid losing influence in their organisations.

From an academic perspective, innovation and technological development are often accompanied by deeper philosophical questions: What is Creativity? How does technology affect society and ourselves? These questions are not alien to designers or thinkers. The ideas of many philosophers can provide a broader context for the meaning of design innovation.

The French philosopher Gilles Deleuze once said, “To create is to resist; to resist is to create.” This insight underlines that at the heart of any innovation is the courage to challenge the status quo. In design, this means that to create something truly new and valuable, a designer often has to break with conventional norms and “conventional frames”. Innovative design is often born out of resistance to outdated assumptions or inappropriate user experiences. Deleuze’s words are in line with a practical approach: innovation is not possible without critiquing and overcoming the existing. Every new design solution that seems revolutionary has a contribution from this spirit of resistance – breaking with tradition and making room for something qualitatively different. At the same time, Deleuze points out the opposite: every resistance creates something new. For example, criticism of an app’s poor usability can be the trigger for a completely redesigned, user-friendly version. Thus, Deleuze’s philosophy can be clearly seen in design innovation: creativity and change are born in rebellion against the status quo.

Michel Foucault has also written extensively on how society shapes knowledge and how this knowledge can suppress new views. In his writings we read the idea that all power inevitably faces resistance – “Where there is power, there is resistance”, said Foucault (Foucault, 1978. p. 95). This idea can also be applied to technology and design: dominant technological standards and paradigms often gain ‘power’ – they determine how people think, what is considered the norm. But sooner or later there are designers or thinkers who challenge this power by offering a different perspective. For example, at a time when complex, feature-laden software dominated, the user experience (UX) movement emerged, resisting the idea of “the more features the better” and instead emphasising simplicity and user needs. Initially, this approach was at odds with the existing discourse of power in technology, but resistance gradually created a new norm: today, user-centred design is a given. From a philosophical point of view, this confirms Foucault’s observation: innovation is born in a struggle with existing power (ideas, norms), and over time this struggle can change the discourse itself. The American futurist and inventor R. Buckminster Fuller famously aphorised: “You will never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete”. This idea applies very directly to innovation processes in design and technology. Fuller calls not to focus on “beating” the old system within its rules, but to create an entirely new system in which the old problems are no longer relevant. In a design context, this might mean, for example, that when users complain about the complex navigation of a website, a radical solution would be to redraw the whole service model – perhaps even abandoning the website concept in favour of a mobile app or voice assistant that solves a user need more directly. Fuller’s advice to “build a new model” echoes a design thinking approach where innovators take a broader view – not just fixing the flaws in an existing product,

but redefining the problem itself. Fuller's quote also embodies foresight: true innovation often makes the old approach irrelevant. For example, the advent of smartphones was a new model that made a whole range of individual devices obsolete (mp3 players, compact cameras, paper maps). This strategy – to create something so superior that the old becomes obsolete – has become the motto of innovators in many sectors.

Technology and media theorist Marshall McLuhan once aptly noted the dialectic of human-tool interaction: “We make our tools, and then the tools make us.” This insight underlines that technology is not neutral: as soon as people create a new tool (such as a smartphone, social networking or design software), it begins to have an inverse impact on their own lives and mindsets. For designers, this McLuhan principle reminds us that design shapes user behaviour. For example, interface design determines how people access information, communicate or even think (thinking patterns can be influenced by, say, a character limit on Twitter or the presence of a ‘Like’ button). Understanding that tools shape us, designers take responsibility to create tools that shape us in a positive direction – to foster productivity, creativity, communication, not dependency or divisiveness. At the same time, McLuhan's insight also invites self-reflection on innovation: every design innovation will change the context in which people operate, so we need to think one step ahead: what are the implications of what we create? This philosophical perspective helps designers to see the bigger picture, beyond the short-term goal of “making things prettier or more comfortable”, and to be aware of the impact on people's habits and society as a whole.

To summarise, the philosophers' insights highlight the deeper meaning of innovation: it arises from overcoming the status quo (Deleuze), it requires a critical examination of power and norm structures (Foucault), it is realised through the creation of new paradigms (Fuller), and it inevitably changes us (McLuhan). In design and technological development, these principles are not abstract: they help us to understand why innovation happens and remind us that each innovation is part of a larger evolution of human thoughts and ideas. Such a philosophical framework can enrich designers' perspectives by asking strategic questions: what are we really changing with this new solution, what values does it embody and what kind of world will it shape? After all, as the German philosopher Friedrich Nietzsche said, “man needs chaos within himself to create a dancing star” – and it is this creative restlessness and vision of new “stars” that designers bring to our everyday technological world. A similar message was also expressed by the conference's Mystery Speaker – “Life is a Mystery”. This presentation was a symbolic reminder that the beauty of creativity and life lies in the unknown.

The discourse of innovation and design is shaped not only by philosophers, but also by the leaders of the field itself – design thinkers, entrepreneurs and technology visionaries, whose quotes often become slogans among designers. Their insights help to articulate practical principles to guide us and connect academic thinking to the real world of business and products.

Tim Brown, CEO of IDEO and a promoter of design thinking, defines the role of design in innovation as “Design thinking is a human-centred approach to innovation

that uses a designer's toolbox to integrate human needs, technological capabilities and business success enablers." (Brown, 2008. *Design thinking*, pp. 84–92.) This complex definition, coming from an industry practitioner, reflects the fact that good design simultaneously addresses desirability, feasibility and viability – or, in Brown's words, combines the desirable, the doable and the profitable. For designers, it's a formula: innovation will emerge where user preferences, the power of new technology and business goals meet. For example, when developing a new app, design thinking will require exploring unmet user needs (desirability), considering what today's technology makes possible (feasibility), and making sure the solution will make economic sense (viability). Tim Brown's guiding principle is human-centredness in innovation: despite the whirlwind of technology, the starting point is always the person and their problem. This approach is widely adopted by start-ups and corporations alike, making designers interdisciplinary intermediaries between engineers and business people.

Another famous industry quote comes from Steve Jobs, who highlighted the essence of design in product development: 'Design is not just how something looks and feels. Design is how it works' (Walker, 2003). This short phrase has become a cliché for UX designers around the world. Jobs reminds us that aesthetics is only one dimension of design – usability and functionality are just as (if not more) important. From an industry perspective, this was the foundation of Apple's product philosophy and has become a cornerstone of good practice today: a gorgeous interface is worthless if it doesn't provide an intuitive and efficient experience for the user. This is also true for today's users – research shows that users judge products on how well they solve their problems, not just on how beautifully they are designed. Jobs' quote serves as a reminder for designers to always ask: "Does my design work for the user? Does form follow function?" This is consistent with the modern design principle that function and form are not opposites, but harmonious wholes – in good design they merge into an inseparable experience.

UX researcher Jared Sproul is often quoted as saying: "Good design, when done well, becomes invisible. It's only when it's done poorly that we notice" (Sproul, 2016). This observation accurately describes the ideal of user flow invisibility: if the interface is intuitive, the user simply reaches their destination without getting caught up and doesn't even think they are experiencing "design". But pitfalls, confusion, unnecessary steps – they stand out and catch the eye immediately. In industry, this idea encourages usability testing and iteration: designers try to identify all the user's difficulties and fix them until the product "disappears" into the user's hands, allowing them to focus on the task rather than the interface. Sproul's quote also implies the holistic nature of design: many factors (information architecture, visual cues, speed of response, etc.) must converge to achieve this invisibility. Good design therefore requires care and attention to detail to make the end result seem easy and obvious.

Today's technology leaders also often stress the importance of creativity and interdisciplinarity in innovation. Steve Jobs, for example, praised the intersection between the humanities and the technical sciences. He said that Apple's success is based on the company being "between technology and the liberal arts", creating products that are

both technologically powerful and humanly appealing. This vision promotes the idea in the industry that design is not an isolated process, but a bridge between engineer and user, between algorithm and story. Following this idea, many companies are building multidisciplinary teams where engineers, designers, anthropologists and writers work side by side to ensure that innovation is both technically ingenious and relevant to human desires.

Gemma O'Brien stood out among the *SmashingConf* speakers with her presentation "Words That Bloom". Gemma O'Brien is an internationally renowned designer and artist and gave an attractive and practical insight into the process of creating large-scale handwritten and wall murals. Her creative demonstration showed the step-by-step path from gathering inspiration materials and sketching by hand to digitally painting on an iPad and painting the final result into a mural. O'Brien encouraged designers to step away from their screens and try calligraphy and handwritten illustration to expand their creative skills.

Quotes from industry leaders and experts succinctly express the practical principles that guide design and innovation: be human-centred (Tim Brown), don't lose focus on functionality (Steve Jobs), create solutions that transcend existing paradigms (Buckminster Fuller), and ensure that design serves the user so smoothly that it becomes transparent (Jared Sproul). Taken together, these insights form a kind of set of industry dos and don'ts that help structure the thinking of both the new designer and the experienced product manager. They remind us that innovation is not an end in itself – it must bring real benefits to people; that design is not a luxury – it is a prerequisite for success; and that the greatest achievements come from combining creativity with strategy and technology. The content of the *Smashing Conference Antwerp 2024* echoed many of these messages, both explicitly and implicitly, demonstrating that industry practitioners and thinkers globally are talking in the same direction: to create innovative design that improves lives, using modern tools and a deep understanding of people.

All in all, *SmashingConf Antwerp 2024* provided an in-depth insight into both practical design innovations and confirmed the core values and principles that permeate the development of the industry. Keynote speakers shared concrete techniques and experiences – from design and code synergy to inclusive AI graphics – while resonating with the big ideas: that design is for people's wellbeing, that innovation is born from breaking boundaries, and that in the age of technology, the human factor is more important than ever. The overall message of the conference and the trends discussed clearly showed: UX and UI is a dynamic and multifaceted field where creativity, technology, philosophy and business converge. The old divide between creative and functional designers was a little more pronounced, but that doesn't change the fact that designers today need to be craftsmen, strategists and empaths – and this holistic view is what *SmashingConf* fostered, inspiring professionals to keep learning, sharing and co-creating a better digital world.

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MINDFULNESS AND TEACHERS' SUBJECTIVE WELL-BEING IN THE PROFESSIONAL DOMAIN

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ABSTRACT

The research examines how mindfulness interventions affect educators' emotional well-being and professional engagement while studying the necessity for building teachers' emotional resilience and more effective Social-Emotional Learning (SEL). Professional educators worldwide now recognise mindfulness as a viable option to develop their mental balance, classroom capabilities, and self-awareness because teacher distress and burnout rates have reached concerning levels (Taylor et al., 2024; Schonert-Reichl, 2017). This mixed-methods study combined qualitative semi-structured interviews with nine educators and a quantitative online survey of 98 teachers to examine perceived impacts of mindfulness on well-being and professional practice. Qualitative data were transcribed, anonymized, and analyzed in NVivo using inductive in-vivo coding to remain grounded in participants' language, aligning with established rigor practices in qualitative analysis. The survey comprised 21 Likert-scale items derived from themes identified in the qualitative phase, covering personal (well-being, emotion regulation) and professional domains (classroom relationships, instructional practice). The survey data has been analyzed using MS Excell descriptive statistic measures. All study participants had completed a nine-month mindfulness professional development program with daily formal and informal practice options, supporting integration of practice exposure with reported outcomes. The research documented clear findings about how mindfulness teachers developed superior stress management capabilities, emotional resilience, and stronger classroom relationships. More than sixty per cent of participants experienced personal advantages, and fifty-five per cent documented enhanced professional competencies focused on student emotion regulation. The findings support evidence that mindfulness is important in supporting teacher welfare and could support teachers ability to model SEL. Long-term evaluation of mindfulness's implications on teaching development with extended research in schools will help determine its usefulness for educational policy and classroom practice.

Keywords: *Emotional regulation, Mindfulness-based interventions, Social-emotional learning (SEL), Stress management, Subjective well-being, Teacher burnout, Teacher professional development, Teacher well-being*

Introduction

Current theory and research data suggest two educational trends to which mindfulness in teachers' professional development could significantly contribute. One is the teacher's subjective well-being and burnout problem. The well-being of teachers directly affects the education system and their professional performance (Dreer, 2023). According to Taylor et al. (2024), teacher burnout is a global concern that can profoundly affect educators' well-being and students' educational outcomes (Alves, Lopes & Precioso, 2021). The systematic review of teacher burnout's association with academic achievement and student-reported outcomes provides evidence that teacher burnout is associated with worse academic achievement and lower-quality student motivation. Madigan & Kim (2021) argues that the systematic review of research on the outcomes of teacher well-being highlights the significant relationship of teacher well-being with several factors and desirable outcomes, including teacher retention, teacher-student relationships, and student outcomes.

According to a study by UNESCO (2024), the other area is SEL, which is rapidly entering school curricula. Teachers' influence reduced subjective well-being and the ability to manage their social-emotional domain. Research conducted by Schonert-Reichl (2017) indicates that educators with stronger SEC (Social and emotional competencies) have more positive student-teacher interactions and more effective classroom management (Dorman, 2015; Jennings & Greenberg, 2009; Jennings et al., 2017). In addition, Braun et al. (2019), Jennings (2018), and Roeser et al. (2013) note that they are better equipped to teach and model social-emotional skills for students and to help students with emotional challenges.

Several studies demonstrated strong links between teachers' characteristics, such as self-awareness, social awareness, empathy, and warmth, particularly for affective and behavioural student outcomes (Scheirlinckx et al., 2023). However, there is a gap in how mindfulness practices affect teachers' well-being and students' academic outcomes. This study explores how mindfulness practice affects teachers' subjective well-being and how teachers perceive the ways mindfulness has changed their professional practice. The research questions of this study are: What is the potential contribution of mindfulness practice to education and teachers' professional development? How do teachers experience and perceive the impact of mindfulness practice in their personal and professional lives? What are the most effective ways to promote integrating mindfulness practices into teacher professional development and educational settings?

Theoretical Framework

In recent years, mindfulness has gained increasing attention across various professional domains, including education, due to its potential to enhance psychological well-being, emotional regulation, and interpersonal relationships. As educators face growing demands and stressors, mindfulness practices are emerging to foster emotional

resilience, improve mental health, and support professional effectiveness. Within this context, the current research draws on Jon Kabat-Zinn's conceptualization of mindfulness as "the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience." According to Kabat-Zinn, 1990; Schuman-Olivier et al. (2020), mindfulness has been categorised as a state or trait, and repeated meditative practices create a mindfulness state, like mindfulness meditation. Increased trait mindfulness, and those with more significant increases in state mindfulness had greater increases in trait mindfulness (Kiken et al., 2015). Both state and trait mindfulness are associated with cognitive and emotional benefits. However, state mindfulness is associated with immediate benefits, such as improved attention and reduced stress. In contrast, Kim & Park, (2023); Lomas et al. (2017) note that trait mindfulness is associated with long-term psychological well-being, emotional regulation and resilience. To this idea, Abaker et al. (2025) argue that mindfulness enhances self-awareness, emotional regulation, and stress management, increasing job satisfaction and resilience.

Mindfulness practices help mitigate teacher burnout by fostering emotional balance and reducing work-related stress (Wu & Qin, 2025; Carroll, Hepburn, & Bower, 2022). According to Henriksen and Gruber (2024), improved communication and stronger relationships with colleagues and students improve decision-making, effectively helping teachers manage classroom challenges

SEL involves acquiring and applying skills to manage emotions, build healthy relationships, promote self-awareness, and make responsible decisions (CASEL, 2020; Henriksen & Gruber, 2024). Since SEL is becoming an important topic, it would be important to address teachers' ability to model SEL competencies and qualities for students, and mindfulness can become a significant support for teachers. As per research conducted by Shi and Cheung (2024), enhanced self-awareness and emotional regulation cultivated through mindfulness practice can help them effectively model these competencies for their students. Improved communication and stronger relationships associated with mindfulness practice can foster a culture of empathy, understanding, and respect in the classroom, essential for effective SEL implementation. Research suggests that teachers who incorporate mindfulness in SEL report stronger student engagement and improved classroom environments (Wu & Quin, 2025). Furthermore, evidence suggests mindfulness-based SEL programs enhance students' emotional intelligence and resilience, leading to better academic and social outcomes (Schonert-Reichl et al., 2015; de Carvalho, Pinto & Maroco, 2017; Rodríguez-Ledo et al., 2018).

Research Methodology

This study employed a mixed-methods approach to investigate how educators perceive the impact of mindfulness on their well-being and professional practice. The research design included a literature review, qualitative semi-structured interviews ($N = 9$) with content analysis (NVivo), and a quantitative survey (MS Excell descriptive statistics) ($N = 98$).

All research participants were educators who had completed the professional development program “*Mindfulness and its Teaching and Application Methods in Educational Institutions*,” in which they were encouraged to practice mindfulness daily for 9 months. Practices included both formal and informal ways of practising. As the leading formal practice, most participants chose mindfulness meditation – sitting for 10 to 20 minutes still and maintaining attention to physical sensations in the body, primarily sensations of breath. Another way of practising has been to bring mindfulness practice to the classroom by exploring different mindfulness practices with children – e.g., scanning the body for physical sensations, mindful listening, mindful observing, mindful eating, etc. Along with formal practices, participants have been encouraged to introduce informal mindfulness practices or mindful activities in their daily routine – mindful walking, SIFT (Sensations, Images, Feelings, Thoughts) (Siegel, 2013) practice and mindful communication.

43.4% of the participants who participated in the research revealed that they continue to perform formal mindfulness meditation practice daily, and 41.4% once a week after finishing the professional development program. 58.6% of the participants showed they continue to practice mindfulness in the classroom daily and 39.4% once a week.

Research has been conducted in two phases: the primary objective of the first phase was to identify the significant ways in which teachers perceive mindfulness as influencing their subjective well-being and how they believe mindfulness practice has impacted their professional activities. This was a qualitative study: semi-structured interviews were conducted with nine teachers who incorporated mindfulness practices into their daily routines. The participants were randomly selected from those who had most recently completed a professional development program in mindfulness for educators, ensuring representation from all levels – preschool (3), elementary (3), and upper-grade teachers (3). The interviews explored participants’ experiences, focusing on the impact of mindfulness practice on their well-being, teaching methods, and students’ socio-emotional learning.

Nine random participants were interviewed remotely using Zoom, and a set of standardised questions were posed: What topics or skill development opportunities do you believe are lacking in Latvia’s professional development programs for educators? Reflecting on your initial motivation, were any challenges or difficulties working with children that prompted you to enroll in the program? What professional support does/did the program provide? What personal support does/did the program provide?

The semi-structured interviews were recorded, generating audio data that formed the basis for qualitative analysis. The authors prepared the data by transcribing the recordings and anonymising all participant responses to ensure confidentiality. The qualitative analysis was conducted using NVivo software, facilitating a structured and transparent analytical process (Dalkin et al., 2021).

An inductive *in-vivo* coding approach was employed, whereby participants’ own words, expressions, and metaphors were highlighted to preserve the contextual meaning of their experiences (Hennink, Hutter & Bailey, 2020). This method allowed the analysis to remain grounded in the language and perspectives of the participants. In line with

Glaser's (1978) criteria, codes were considered valid if they were useful, simple, stable, and relevant to the research questions.

The primary objective of the second phase was to quantitatively assess the extent to which teachers experienced the effects of mindfulness practice on their subjective well-being and professional activities. This phase employed a quantitative research design. A total of 224 participants who had completed the mindfulness program were invited to complete an online survey, and 98 educators responded by filling out a structured questionnaire composed of Likert-scale items. Each item was derived from the key benefits of mindfulness identified during the qualitative phase, and participants were asked to indicate the extent to which they had experienced that specific benefit. The survey consisted of 21 Likert-scale items, divided into two thematic categories: nine items addressed the personal domain (e.g., well-being and emotional regulation), while twelve items focused on the professional domain, including classroom relationships and instructional practice.

Ethics Guidelines Adherence

This study was conducted in strict compliance with ethical standards for human subjects research, ensuring participant protection and data privacy throughout all phases of the research process.

For the qualitative research component involving semi-structured interviews with nine educators, all participants signed informed consent forms prior to participation, which provided comprehensive information about the study's purpose, procedures, potential risks and benefits, and their rights as research participants.

The informed consent process explicitly informed participants of their right to withdraw from the study at any stage without penalty or negative consequences, ensuring voluntary participation was maintained throughout the research process. Participants were clearly advised that their decision to discontinue participation would not affect their access to professional development programs or any other services.

To protect participant privacy and confidentiality, all data collected during the qualitative phase underwent systematic anonymization procedures before analysis. Personal identifiers, institutional affiliations, and any information that could potentially link responses to specific individuals were removed or altered. Access to raw interview data was strictly limited to research team members directly involved in the study, with secure storage protocols implemented to prevent unauthorized access.

All participants were informed that research findings would only be published in aggregate form, ensuring individual responses could not be traced back to specific participants.

The quantitative survey component employed technological safeguards to ensure participant anonymity from the point of data collection. The electronic data collection system was specifically designed to prevent any collection of personally identifiable information, ensuring that researchers had no means of linking survey responses to individual participants.

Prior to survey participation, all potential respondents received clear explanations about the voluntary and fully anonymous nature of their participation. The data collection system was configured to ensure that no identifying information could be associated with any participant's responses, providing complete anonymity rather than merely confidentiality.

Throughout both research phases, data protection measures were implemented in accordance with international standards for research ethics. All personal data processing adhered to principles of lawfulness, fairness, and transparency, with participants fully informed about data collection purposes, storage methods, and intended use.

Data minimization principles were applied to ensure that only information directly relevant to the research objectives was collected. Secure storage protocols were established with appropriate technical and organizational measures to protect against unauthorized access, loss, or destruction of participant data. Access controls were implemented to ensure that only authorized research team members could access participant information, with clear accountability measures in place.

These ethical safeguards ensured that the research was conducted with full respect for participant autonomy, privacy, and welfare while maintaining the scientific integrity necessary to achieve the study's research objectives.

Results

The results are structured following the two-phases research design. First, qualitative data derived from semi-structured interviews are analysed to uncover recurring themes and categories related to teachers' challenges, motivations, and the perceived benefits of mindfulness (see Tables 1 and 2). Second, the quantitative findings from the structured questionnaire are presented, offering a broader view of how these perceived benefits are distributed across a larger sample of educators (see Tables 3 and 4). Together, these findings provide a comprehensive understanding of how mindfulness practice supports educators in managing stress, enhancing classroom dynamics, and modelling social-emotional competencies.

The interview data suggest that teachers face external and internal challenges in their professional lives, many of which mindfulness training appears to mitigate. First, a significant challenge highlighted by participants relates to difficulties establishing meaningful connections with students. The category "Difficult to connect with children and people" was the most frequently mentioned (20 references), and several subcodes elaborate on this theme. Teachers reported issues such as children being emotionally disengaged, unfocused, or lacking human connection with adults. These findings reflect a broader concern about the relational climate in classrooms and suggest that educators feel a pressing need for tools that help build authentic interpersonal engagement. Additionally, while some references touched on systemic stressors, such as burnout and the pressures of a fast-paced routine, the dominant concerns focused on the emotional and behavioral

Table 1 Teachers' Challenges in Applying for and Participating in Mindfulness-Based Professional Development Programs

Nr.	Categories and codes	Mentioned in interviews
1.0	Difficult to connect with children and people	20
1.1	Children are not present	3
1.2	Children have difficulties regulating emotions	1
1.3	Children need human contact from the teacher	2
1.4	Children are restless and unfocused	6
1.5	Difficulties in creating engagement	2
1.6	It is necessary to build a connection with the child	2
2.0	Teachers burn out	2
3.0	A fast-paced daily routine causes stress	2

Table 2 Perceived Personal and Professional Benefits of Mindfulness Practice Among Educators

No.	Categories and codes	Mentioned in interviews
1	Ability to maintain peace and balance in everyday situations.	13
2	Higher self-awareness. And greater confidence in professional skills.	6
3	Ability to cope with difficult moments and situations in life more easily.	6
4	A wider perspective on life and work.	8
5	Ability to create more humane contact with children.	5
6	Focused work	2
7	Gained practical techniques to help children regulate emotions	6
8	Opportunity to meet like-minded people and receive support	4
9	Personal experience that allows understanding of spiritual and psychological phenomena	2
10	Professional benefits are hard to separate from personal ones	4
11	Understanding of how your inner state reflects in your work with children.	4
12	Ability to manage stress more easily.	4
13	More relaxed attitude in the classroom, Not following the plan at all costs	2
14	A wider and deeper perspective on children	1
15	Understanding that teachers must practice what they teach	3
16	They started valuing their time more highly	4

challenges of working with students. This supports the rationale for introducing mindfulness in teacher training as a personal well-being intervention and a professional strategy for classroom engagement and emotional support.

The second set of interview data reveals the perceived benefits of mindfulness practice, which closely align with personal and professional domains (see Table 2).

The most frequently cited benefit – “Ability to maintain peace and balance in everyday situations” (13 mentions) – indicates that mindfulness helps teachers respond more calmly to daily stressors. Several additional codes point to improved emotional regulation, self-awareness, and the capacity to cope with life’s difficulties, suggesting that mindfulness contributes to a broader sense of psychological resilience.

These benefits were not abstract or theoretical but grounded in deeply personal experiences. As one teacher reflected: *“You know, this sense of peace came over me! As if nothing changed, but at the same time, everything changed.”* (Respondent 1)

Moreover, several responses reflected an enhanced professional identity. Participants noted a *“greater confidence in professional skills,”* *“a wider perspective on life and work,”* and an *“ability to create more humane contact with children.”*

Respondent 1 describes how mindfulness shifted her professional perspective: *“I no longer try to save the world so frantically... If someone needs help, they will ask. Teachers often suffer from excessive empathy – we throw ourselves into rescuing, helping, explaining everything—but we do not need to! That is something we must learn.”*

Another teacher (Respondent 3) emphasized the practical benefit of slowing down and breaking problems into manageable parts: *“You can resolve any issue – slowly, calmly, by breaking it into parts. It works, and that is incredibly valuable.”*

These outcomes suggest that mindfulness supported internal self-regulation and translated into external relational improvements, including more empathetic and responsive teaching. Notably, some teachers stated that professional and personal benefits were difficult to separate, indicating that mindfulness blurred the boundary between personal growth and pedagogical practice. Interestingly, several respondents emphasized the importance of embodying what they teach, stating, for example, that *“teachers must practice what they teach”* and that their *“inner state reflects in work with children.”*

Participants also highlighted changes in their classroom interactions and relationships with students. Respondent 2 explained how self-awareness enhanced her ability to understand children: *“When you become aware of yourself, something shifts—and through that, you can more easily understand the children.”* She also described how mindfulness improved communication: *“You realise a child is angry or jealous, and this emotional awareness helps you understand that it’s not aimed at you – it’s just how the child feels. It also helps the child verbalize those feelings and become aware of them. Now, my students say things like: ‘Leave me alone for now, I want to be by myself,’ or ‘I’m solving a crossword puzzle—please don’t interrupt.’ It’s no longer offensive between them.”*

Respondent 3 expanded on this interpersonal benefit: *“When I hear myself, I can hear the children too—not just the students, but also my colleagues. I can ask them deeper questions to help them find solutions.”*

These reflections point to a deeper internalization of mindfulness principles, beyond technique, into a mindset that influences daily interactions and pedagogical choices. Finally, some responses touched on the social and community aspects of the training, such as the value of meeting like-minded colleagues and receiving support. This suggests that the program fostered a sense of professional belonging and collective learning, which

may reinforce its positive effects. Overall, the qualitative data support the conclusion that mindfulness training addressed teachers' emotional challenges and aspirations to become more reflective, connected, and responsive educators. These findings align with prior research that associates mindfulness with increased emotional regulation, improved teacher-student relationships, and reduced burnout, affirming the program's relevance for professional development.

The study's second phase aimed to quantitatively assess the extent to which the benefits of mindfulness practice, identified in the qualitative interviews, were perceived across a broader sample of educators. A total of 224 participants who had completed the mindfulness-based professional development program were invited to participate in the survey, with 98 respondents completing the questionnaire. The survey consisted of 21 Likert-scale items, each reflecting a specific personal or professional benefit previously identified in the qualitative phase. Respondents were asked to indicate the extent to which they had experienced each benefit, using a five-point scale (1 = No improvement, 5 = Very significant improvement). The quantitative data has been analyzed using MS Excell tools for descriptive statistics. The results demonstrate that mindfulness practice was associated with marked improvements in both personal well-being and professional functioning. In subjective well-being, over 60% of participants reported significant or significant improvements in areas such as maintaining peace and balance in everyday life, managing stress, coping with difficult situations, and developing a broader life perspective (see Table 3). For example, 63.27% of participants reported a significant improvement and 20.41% significantly improved their ability to maintain emotional calm in everyday situations. Similarly, over 60% reported moderate to significant gains in managing stress and prioritising tasks effectively – key factors in avoiding burnout. The statistical analysis reinforces these results. Across most well-being-related items, the mode and median values were consistently 4 or 5, indicating that the most frequent and central responses reflected substantial perceived benefit. Standard deviations were relatively low, suggesting consensus among respondents regarding the effectiveness of mindfulness in supporting their emotional well-being. In the professional domain, teachers also reported substantial improvements (see Table 4). More than 55% of respondents indicated significant or very significant gains in forming closer bonds with students, supporting children's emotional regulation, and fostering attention and engagement in the classroom. Notably, 55.1% of participants reported significant improvement, and an additional 21.43% reported significant improvement in their ability to help students regulate emotions. Similarly, 39.8% of participants reported significant improvement, and 41.84% very significant improvement, in their awareness of how their internal state affects student interactions.

The responses also indicated increased self-awareness and enhanced communication skills, translating into more responsive, empathetic teaching. These findings suggest that mindfulness training promotes individual well-being and strengthens core pedagogical competencies, such as emotional attunement, relational capacity, and classroom presence. Overall, the quantitative findings validate and expand upon the qualitative results. They confirm that integrating mindfulness into teachers' personal and professional routines

Table 3 Improvements in personal domain

Category	Significant improvement %	Very significant improvement %	Mode	Median	SD
Ability to maintain peace and balance in everyday situations	63.27%	20.41%	4	4	0.78
The ability to manage stress more easily	56.12%	20.41%	4	4	0.77
Ability to cope more easily with difficult moments and situations in life	46.94%	20.41%	4	4	0.85
A broader perspective on life and work	28.57%	59.18%	5	5	0.86
The ability to set priorities and use time more effectively	43.88%	17.35%	4	4	0.90

1 – No improvement experienced, 2 – Slight improvement, 3 – Moderate improvement, 4 – Significant improvement, 5 – Very significant improvement

Table 4 Improvements in professional domain

Category	Significant improvement %	Very significant improvement %	Mode	Median	SD
Awareness of how your internal state is reflected in your work with children	41.84%	39.80%	5	4	0.87
Ability to help children regulate their emotions	21.43%	55.10%	4	4	0.80
Ability to form closer bonds with children	25.51%	55.10%	4	4	0.79
The ability to promote children's presence and attention	21.43%	48.98%	4	4	0.85
The ability to generate greater engagement in the learning process	11.22%	43.88%	4	4	0.87

1 – No improvement experienced, 2 – Slight improvement, 3 – Moderate improvement, 4 – Significant improvement, 5 – Very significant improvement

is highly beneficial, supporting emotional resilience, relational depth, and effective classroom engagement. These outcomes highlight the value of mindfulness-based professional development as a comprehensive strategy for supporting educators' well-being and enhancing the learning environment.

Discussion

This study suggests that mindfulness-based practices can meaningfully improve teachers' subjective well-being and professional functioning. The qualitative interviews and the quantitative survey data indicate that participants experienced enhanced emotional regulation, reduced stress levels, and increased calmness in their daily lives and

professional activities. Rather than reiterating individual benefits identified in earlier phases, this discussion highlights key patterns that emerged across both data sets. Many participants reported using mindfulness techniques to foster emotional intelligence and develop greater patience, core competencies aligned with the principles of Social and Emotional Learning (CASEL, 2020). Teacher well-being is widely recognized as foundational for effective teaching and student engagement (Jennings & Greenberg, 2009). Integrating mindfulness into professional development programs offers a promising strategy for preventing teacher burnout and equipping educators with the emotional competencies necessary to support their students' socio-emotional growth. The findings from this study add localized, qualitative depth to existing research, aligning with outcomes reported in mindfulness-based teacher training initiatives such as the CARE (Cultivating Awareness and Resilience in Education) program (Jennings et al., 2017). However, the findings should be interpreted with caution. Participation in the study was voluntary, and all data were self-reported, which introduces the potential for bias and limits the generalizability of the results. Furthermore, the study design does not allow for causal conclusions, and the outcomes reflect perceived rather than objectively measured changes. These findings represent initial evidence rather than definitive proof of effectiveness. Future research should consider longitudinal or experimental designs to explore the sustained impact of mindfulness training and to assess student outcomes alongside teacher development. Nevertheless, this study offers valuable insights into how mindfulness may be a supportive resource in teacher professional development, particularly in emotional well-being and relational pedagogy.

Conclusions

The results of this study strongly suggest that mindfulness practice is an effective tool for enhancing teachers' well-being, with clear positive implications for their professional roles, particularly in the classroom. The findings indicate that developing emotional balance, stress management, and self-awareness through mindfulness improves teachers' internal coping mechanisms, interactions with students, and professional confidence. As supported by prior research (Wu & Qin, 2025; Carroll, Hepburn, & Bower, 2022), mindfulness enables educators to maintain a sense of calm and emotional regulation in everyday and high-pressure classroom environments. Over time, this stability can foster stronger self-efficacy and resilience, essential to sustaining effective teaching practices. The present findings are consistent with previous studies showing that mindfulness helps mitigate teacher burnout by reducing work-related stress and promoting emotional well-being. Moreover, the study highlights that mindfulness practice can enhance teachers' relational capacities. Increased self-understanding allows educators to build deeper, more empathetic connections with students and to apply practical techniques that support children in regulating their own emotions. These findings align with research by Roeser et al. (2022) and Gebre, Demissie, and Yimer (2025), demonstrating that mindfulness contributes to improved decision-making and more effective classroom management

by fostering present-moment awareness and emotional clarity. Integrating mindfulness into teacher professional development may offer a valuable pathway for supporting educator well-being and the quality of teacher–student relationships.

Limitations and Considerations for Future Research

One limitation of this study is its reliance on self-reported data, which may be subject to biases such as social desirability or inaccurate self-perception. These factors can affect the reliability of the findings, as participants may overestimate or underestimate the impact of mindfulness practice. Future research could address this limitation by incorporating objective measures or triangulating self-reports with independent data sources, such as classroom observations or feedback from colleagues and students, to increase the validity and robustness of the results. Another important consideration is that the participants in this study covered the costs of the mindfulness-based professional development program themselves. This element may have influenced their motivation to engage with the intervention and their perception of its effectiveness. Specifically, self-funded participants may have been more inclined to perceive the program as beneficial to justify their financial investment – a phenomenon known as self-justification bias. Furthermore, the sample may reflect a degree of selection bias, as individuals willing to invest in such training may already be more motivated, reflective, or predisposed to believe in the benefits of mindfulness. This means the sample may not fully represent the broader teaching population. In addition, participants who have made a financial commitment to the program may be more likely to report positive outcomes, which could influence the interpretation of the results. To address these potential biases, future research could compare the experiences and reported outcomes of self-funded participants with those who participate in programs that are subsidized or institutionally supported. The intervention used in this study was also relatively extensive, combining practical mindfulness activities with theoretical content over a prolonged period. While this structure provided rich qualitative insights, it may limit comparability with other studies. Future research should consider using standardized mindfulness-based interventions, such as Mindfulness-Based Stress Reduction (MBSR) or adapted school-based programs, to isolate the specific effects of mindfulness practice and enhance the replicability of findings across contexts. It would also be beneficial to compare the effectiveness and appropriateness of different mindfulness training models for educators, including considering how mindfulness can be sustainably implemented within school settings. To validate and extend the findings of this study, future research should include larger and more diverse participant samples, which would improve the generalizability of the results. Longitudinal designs are also needed to assess the long-term effects of mindfulness on educators' well-being and professional functioning. An important avenue of investigation is to explore what happens when mindfulness practice is discontinued – for instance, whether the benefits diminish over time, and to what extent. Including a control group in future studies would also strengthen the evidence base by allowing for more accurate assessments of the intervention's effectiveness and its causal impact.

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THE IMPACT OF FINE AND GROSS MOTOR SKILLS DEVELOPMENT ON WRITING SKILLS FORMATION IN PRESCHOOL

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ABSTRACT

Early language and writing development in preschool education is a crucial foundation for children's successful development and future academic achievement. Recent studies highlight the importance of acquiring writing skills at an early age, yet comparatively little attention has been given to how the preschool educational environment supports and promotes these skills. This study provides a theoretical analysis of the role of fine and gross motor skills in the development of writing skills in preschool-aged children, with particular attention to the significance of motor abilities in the writing acquisition process.

To explore the interconnection between writing skills and motor development, a systematic literature review was conducted, drawing on scientific and theoretical studies that examine the impact of children's physical development on their writing abilities. Pedagogical and regulatory documents emphasize the need to promote children's motor development and to ensure an environment that purposefully supports writing skills. Writing is understood as a complex cognitive and motor process involving auditory perception, letter recognition, and movement coordination. Therefore, the development of motor skills at an early age forms a critical foundation for the acquisition of writing skills.

The findings indicate that the development of fine motor skills, particularly the precision of hand and finger movements, significantly influences the ability to form letters and use writing tools. Gross motor skills provide body stability, posture, and coordination essential for writing.

The quality of the learning environment and pedagogical support is also essential, as it fosters children's motivation and engagement. The results confirm the need for a structured, evidence-based approach that recognizes motor skills development as a key prerequisite for writing acquisition.

Keywords: *emergent writing, fine and gross motor skills, pedagogical environment, prerequisites, preschool children, writing development*

Introduction

Writing skills in the preschool years develop as a complex and multidimensional process that involves language comprehension, thinking, motor abilities, and social interaction.

These skills do not emerge in isolation – their foundations are laid in early childhood through play, drawing, and imitation of writing (Dennis & Votteler, 2013; Byington & Kim, 2017).

Contemporary research emphasizes that writing is not merely a mechanical skill – it is also a cognitive, social, and cultural process that reflects the child's desire to express themselves symbolically and meaningfully (Dyson, 2009; Vygotsky, 1978). These abilities develop through both fine motor skills – such as finger muscle control, pencil grip, and movement precision – and gross motor skills, which provide posture and body stability during writing (Montessori, 2019; Chung et al., 2020).

The development of writing skills is also significantly influenced by the quality of the pedagogical environment and the professional actions of the teacher. National education guidelines in Latvia (Cabinet of Ministers, 2018; Preschool Education Curriculum, 2019; Skola2030, 2017) emphasize the importance of integrating movement into the learning process and creating an environment that is developmentally appropriate for the child.

The aim of this theoretical study is to analyze how the development of fine and gross motor skills influences the formation of writing skills in preschool-aged children, with special focus on structured movement activities and the role of teacher support.

Literature Review

Fine motor skills involve the function of small muscles, particularly the coordination of hand and finger movements necessary for precise actions such as drawing and writing (Brown Health, n.d.; Giagazoglou et al., 2001). To write, a child must be able to grasp a writing tool, draw lines, and form letters with accuracy. Byington and Kim (2017) and Clay (2000) emphasize that children acquire writing through early symbolic markings, which gradually develop into structured text.

The nine-stage model of emergent writing development – from scribbling to full sentences – allows for an assessment of children's conceptual and symbolic understanding of writing. A detailed description of this model is presented in the Results section (Byington & Kim, 2017).

Gross motor skills involve large movements such as walking, climbing, and balancing, which provide body stability, a prerequisite for writing (Chung et al., 2020; Giagazoglou et al., 2001). Writing also requires the ability to maintain posture and focus over time, supported by the stability of the spine and shoulder girdle.

Practical life activities – such as buttoning, drawing, and sorting – support both fine and gross motor development and should be integrated into daily learning activities (Montessori, 2019).

The three-domain model categorizes writing skills into three interrelated aspects:

- Conceptual domain – understanding the purpose and meaning of writing;
- Procedural domain – technical skills, such as letter formation and pencil grip;
- Generative domain – the ability to produce meaningful text.

This model provides a comprehensive view of writing development and is revisited in the Discussion section (Byington & Kim, 2017).

Writing development in preschool is closely linked to the quality of the pedagogical environment and the professionalism of the teacher. OECD reports (2020, 2021, 2025) emphasize that children's motor skills are strongly connected to language and writing development, advocating for the integration of movement activities as a part of the learning content. This view aligns with educational guidelines that describe the stages of motor development and their importance in acquiring writing skills (Preschool Education Curriculum, 2019; Skola2030, 2017).

In practice, aspects such as posture, pencil grip, and movement coordination are often overlooked, with primary focus placed on learning letters. This limits a child's ability to develop writing as a complex skill (Laganovska, 2023). Learning plans should be based on the child's developmental needs and include tasks that simultaneously enhance motor skills, attention, and self-regulation (Masterson, 2021).

Writing is a social and cultural process deeply connected to a child's experiences, identity, and need for self-expression. Within this approach, the teacher's task is to create an environment where writing becomes a meaningful form of expression, rather than a set of mechanical skills (Dyson, 2009).

Combining insights from OECD research (OECD, 2020, 2021, 2025), Latvian educational documents (Cabinet of Ministers, 2018; Preschool Education Curriculum, 2019; Skola2030, 2017), and theoretical perspectives (Byington & Kim, 2017; Dyson, 2009), it becomes evident that the pedagogical environment is not merely a background but an active factor in children's writing development. Only when a teacher intentionally integrates movement, language, and communication into the environment can a child develop writing as a meaningful form of expression.

Methodology

This study is theoretical in nature, and its methodology is based on qualitative analysis aimed at evaluating the impact of fine and gross motor skill development on the formation of writing skills in preschool-aged children. The analysis relies on a review of scientific literature, regulatory documents, and examples from pedagogical practice, which allows for the integration of theoretical insights with educational practice.

The study incorporates works by both international and Latvian authors that analyze the interrelation between writing skills and motor development in preschool-aged children, primarily published between 2000 and 2025. The literature was selected through scientific databases (EBSCO, ERIC, ProQuest) as well as resources available at the University of Latvia.

Latvian regulatory documents were also reviewed (Cabinet of Ministers, 2018; Preschool Education Curriculum, 2019; Skola2030, 2017) to determine how the acquisition of writing skills and motor development are reflected in the content and expected outcomes of preschool education. The analysis was conducted using a content analysis approach, identifying key categories and comparing them with international theoretical models.

In addition to literature and documents, the study also draws on examples collected by the author from preschool education practice in Latvia. These include descriptions of children’s manifestations of writing skills and examples of tasks that demonstrate the importance of fine and gross motor skills in the development of writing abilities. The examples were selected based on their relevance to the research aim – to illustrate the interrelation between motor skills and writing abilities in specific pedagogical situations.

The review of literature, regulatory documents, and pedagogical examples was carried out using thematic analysis. As a result, the main themes were identified: the prerequisites of fine motor skills for writing, the importance of gross motor skills in ensuring body stability during writing, and the role of the teacher and the pedagogical environment.

Latvian preschool education regulatory documents play a significant role in the study, particularly curriculum descriptions and national educational guidelines, which outline the expected learning outcomes across different stages of preschool education. These documents enable the analysis of how writing skill development is structured and how it relates to children’s motor abilities and teacher practices (Cabinet of Ministers, 2018; Skola2030, 2017).

The Latvian preschool education guidelines structure the acquisition of writing skills into several progressive stages, which enable the assessment of children’s progress and the provision of appropriate pedagogical support (Preschool Education Guidelines, 2019; see Table 1).

In addition to the analysis of regulatory documents, the methodology incorporates the nine-stage model of emergent writing development, which serves as a theoretical basis for assessing children’s individual writing skills and for adjusting the support provided by the teacher (Byington & Kim, 2017). The application of this model, supplemented with illustrative examples, is presented in the Results section (see Table 3).

Table 1 Description of writing skill acquisition levels in preschool education stages (based on Preschool Education Guidelines, 2019)

Preschool Education Stage	Beginning to Learn	Continuing to Learn	Achieved	Achieved in Depth
1.	–	–	–	–
2.	Writes individual letter elements, learning to correctly hold the writing tool.	Writes letter elements in an unrestricted space, correctly holds the writing tool.	Writes letter elements in an unrestricted space.	Writes letter elements in an unrestricted space and controls hand and finger muscles.
3.	Recognizes and writes some printed letters in an unrestricted space.	Recognizes and writes nearly all printed letters in an unrestricted space.	Writes printed letters in an unrestricted space	Recognizes and writes all printed letters and connects them into words to the best of their ability.

The methodological approach provides a foundation for comparing theory and practice and allows for conclusions about the necessity of structured motor development as a crucial prerequisite for the formation of writing skills in preschool education. It highlights the alignment between theory and practice in writing development and emphasizes the importance of incorporating structured motor development as an integral part of preschool education.

Results

This study is theoretical in nature, with the findings grounded in the analysis of scholarly literature, Latvian regulatory documents, and examples from educational practice. The analysis allowed for the identification of the key motor prerequisites for the development of writing skills in preschool-aged children and demonstrated how these prerequisites are reflected both in theoretical models and in pedagogical practice.

Research highlights from various authors emphasize that the acquisition of writing skills requires the development of both fine and gross motor abilities. Fine motor skills encompass the precision of hand and finger movements, muscular control, eye-hand coordination, and the ability to correctly grasp a writing instrument. Gross motor skills, on the other hand, provide body stability, balance, and posture, which are essential for sustaining attention and executing precise movements during the writing process (Byington & Kim, 2017; Chung et al., 2020).

By synthesizing the perspectives of various authors, it is possible to identify the main fine and gross motor skills that are closely linked to a child's ability to acquire writing skills (see Table 2).

The significance of fine and gross motor skills can also be observed in other areas of a child's activity, particularly in drawing. Drawing skills in preschool are often perceived as a form of artistic self-expression; however, research shows that they are closely linked to the development of writing skills. Both rely on a shared base of cognitive and motor abilities – in both drawing and writing, visuomotor coordination, spatial orientation, and the ability to represent symbols play a critical role (Pinto & Incognito, 2022). An analysis of preschool children's drawing and writing expressions reveals that the development of these skills occurs in parallel and mutually reinforces one another. These findings emphasize the need to systematically support the development of both drawing and writing skills from an early stage of education, as they not only enhance a child's ability to express themselves visually and verbally but also improve hand-eye coordination, which is a fundamental prerequisite for effective writing.

Preschool education policy documents in Latvia – the *Preschool Education Guidelines* (2019), *Skola2030* (2017), and the Cabinet of Ministers Regulations (2018) – emphasize writing development as a gradual process in which motor skills and visual-motor coordination play a crucial role. These documents describe writing acquisition through learning

Table 2 Key Gross and Fine Motor Skills for Preschool Writing
(adapted from Byington & Kim, 2017; Chung et al., 2020; Rowe & Neitzel, 2010; Laganovska, 2023; Preschool Education Curriculum, 2019; Skola2030, 2017)






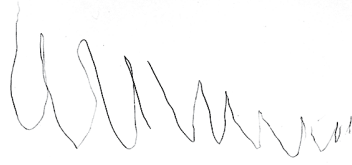

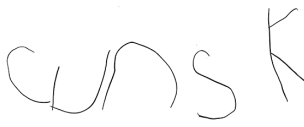
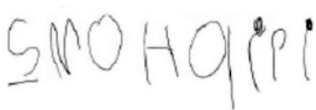

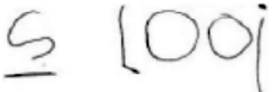
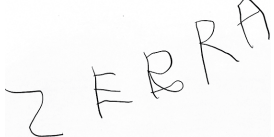
Gross Motor Skills	Fine Motor Skills
Spinal and shoulder stability – A strong spine and shoulder girdle provide stability, enabling the hands to perform precise and controlled movements during writing.	Finger muscle development and movement precision – Essential for properly holding and guiding a writing tool.
Arm and upper arm control – Helps the child guide the hand in the desired direction when forming lines and letters.	Coordination of hand and finger movements – The ability to accurately guide the hand and fingers during writing motions.
Body balance and stability – Proper sitting posture and body balance support stable hand movements and the ability to focus on writing for extended periods.	Precision of individual finger movements – The ability to move fingers independently of one another (e.g., thumb and index finger for holding a pencil).
Cross-lateral arm movements – The ability to use the right hand on the left side of the body and vice versa, facilitating more coordinated and efficient writing movements.	Pencil grip – The correct way of holding a writing tool and regulating pressure on the paper.
	Reproduction of lines and shapes – The ability to draw vertical and horizontal lines, circles, squares, and other shapes, which are foundational for letter formation.
	Hand-eye coordination – The ability to control drawing and writing movements while visually focusing on the task.







outcomes that outline a progression from reproducing lines and shapes to writing letters and words. To illustrate these principles, illustrative examples selected by the authors from preschool practice – children’s marks, letter imitations, and early attempts at word writing – are presented. They demonstrate how the requirements outlined in the documents are reflected in real pedagogical situations and how motor development is closely linked to writing progress. As shown in Table 3, these examples confirm that the stages described in international models are also observable in Latvian preschool practice.

An analysis of Latvian preschool education regulations – including national educational guidelines and curriculum documents – together with the nine-stage emergent writing development model, reveals significant correlations between the development of children’s motor skills and their ability to express meaningful written content (Byington & Kim, 2017; Cabinet of Ministers, 2018; Skola2030, 2017). In the Latvian preschool education system, writing proficiency levels are defined as a progressive process, but they do not explicitly reflect all nine stages included in the writing development model (Byington & Kim, 2017) (see Table 3).

This model allows for a structured analysis of the child’s understanding of writing throughout developmental progression—from unclear symbolic markings to meaningful sentences (see Table 3; Byington & Kim, 2017; author’s personal archive).

Table 3 Stages of Emergent Writing Development based on Byington and Kim (2017), supplemented with examples from Latvian children's writing

Stages of Emergent Writing Development	Examples from Byington & Kim (2017)	Examples from Latvian Children's Writing
<p>Stage 1 – The child draws or marks something, usually scribbles.</p>		
<p>Stage 2 – Scribbling (makes marks or notes).</p>		
<p>Stage 3 – Wavy scribbling (writes in wave-like lines from right to left, imitates writing).</p>		
<p>Stage 4 – Writes letter-like symbols. Understands that information is written using letters but does not yet recognize them.</p>		
<p>Stage 5 – Writes strings of letters (uses symbols that resemble letters, writes in a straight line from right to left, using both uppercase and lowercase letters).</p>		
<p>Stage 6 – Writes a sequence of known letters as if forming words; spaces appear between letters, and some letters may be reversed or written in mirror image.</p>		

Stages of Emergent Writing Development	Examples from Byington & Kim (2017)	Examples from Latvian Children's Writing
Stage 7 – Writes the initial, middle, or final letter or sound heard in a word. A word may be represented by a single letter.		
Stage 8 – Begins to write words (writes words using three letters, representing the initial, middle, and final sounds), writes phrases.		
Stage 9 – Writes words, sentences, and texts; begins to use punctuation marks and correctly applies uppercase and lowercase letters.		

Note. Adapted from Byington & Kim (2017). Latvian examples are from the author's personal archive.

For example, the ability to imitate letters or draw symbols (Stages 2–4) can be observed in the 4–5-year age range, during which the national guidelines emphasize line drawing, shape recognition, and early attempts at writing words (see Table 1). Meanwhile, the ability to use meaningful words and construct sentences (Stages 7–9) corresponds to the 6–7-year age range, which emphasizes writing words and short sentences.

Teachers' practices confirm that the development of children's writing skills is significantly influenced by the teacher's ability to recognize the child's developmental stage and apply suitable tasks. When a child is in the early stages of writing development, producing unstructured marks or symbols, appropriate activities include symbol imitation, sound-letter correspondence games, and movement coordination exercises (Byington & Kim, 2017; Skola2030, 2017). This highlights the necessity of intentional teacher support tailored to each child's developmental level.

Moreover, the analysis of the results shows that motor development activities – such as finger games, construction tasks, and practical life exercises – strengthen children's ability to transition from one stage of writing development to the next. The teacher's role here is to ensure an environment that offers ample opportunities for both motor experiences and symbolic expression.

The findings support the conclusion that there is a theoretically and practically substantiated connection between the level of motor development and the ability to

produce meaningful written text. The capacity to construct words based on phonological awareness and symbolic thinking is one of the most essential prerequisites for writing (Puranik & Lonigan, 2012).

Writing in preschool should be viewed as a social and cultural activity, where the goal is not merely technical letter mastery, but also personal and emotional expression (Dyson, 2009). The results show that children engage more fully in the writing process when the tasks are connected to their personal experiences and meaningful topics. This strengthens the need for a contextually relevant environment in which the teacher fosters not only technical abilities but also the child’s desire to express themselves in writing.

Discussion

The findings are consistent with the three-domain model of emergent writing, in which writing is viewed as an interaction between conceptual, procedural, and generative skills. This confirms that the development of children’s motor abilities is closely linked to the quality of their writing (Byington & Kim, 2017). The teacher’s task is to recognize the child’s developmental level and adapt activities in ways that support the transition from simple marks to structured sentences (see Table 4).

This multidimensional approach provides teachers with the opportunity to structure the learning environment and activities not only based on children’s technical skills but also on their understanding of the purpose of writing and their ability to generate meaningful content. The teacher becomes a mediator between the developmental stage and the possibilities for expression, integrating movement, language, and symbolic thinking into purposeful and developmentally supportive pedagogical practice.

The three-domain model is particularly important because it encourages the implementation of an individualized approach in practice. By understanding which domain is the least developed in a specific child, the teacher can select appropriate activities rather than focusing solely on the writing outcome. This perspective strengthens the teacher’s ability to differentiate tasks, thereby fostering each child’s potential.

To integrate motor, language, and cognitive skills in the writing development process, several internationally recognized programs are used in practice. These programs are based on multisensory and developmental approaches and provide teachers with a structured methodological framework and concrete examples of tasks for improving children’s

Table 4 Three-Domain Model of Emergent Writing. Adapted from Byington & Kim (2017)

Domain	Key Information
Conceptual	Understanding the purpose and function of writing. The child realizes that writing is used to convey information, communicate with others, and record thoughts.
Procedural	Technical skills required for writing: holding a pencil, forming letters, drawing lines. This domain is closely related to fine motor development.
Generative	The ability to creatively and meaningfully produce written text – words, sentences, or stories. This domain reflects the child’s ability to express ideas.

fine motor skills. Two widely used programs that connect fine motor skills, visual-spatial perception, and writing development are discussed below.

One of the most widely used methods for developing writing skills is the multisensory writing program *Handwriting Without Tears*, which is based on a sensorimotor approach and the belief that children learn most effectively when multiple sensory systems – vision, hearing, touch, and movement – are engaged. The content of the program is organized developmentally, and letters are taught in groups based on similarity. This approach is suitable for group instruction as well as individual or home settings, making it particularly appropriate for children with special needs. The program uses simple and child-friendly language, which facilitates its integration into daily teaching practices (Donica, 2015; Olsen, 2001).

The second key program selected for this study, which holds significant relevance in the context of developing preschool children's writing skills, is *Write from the Start* (Teodorescu & Addy, 1998).

The *Write from the Start* program offers a visual-motor and fine motor-based approach to preparing young children for writing. It includes over 400 differentiated exercises and activities that systematically develop hand-eye coordination, shape constancy, spatial organization, and an understanding of form and orientation. The program is divided into eight cumulative sections, and its materials – workbooks and a teacher's manual – allow for the structured documentation of each child's progress (Teodorescu & Addy, 1998).

Write from the Start is conceptually grounded in the recognition of the fundamental role that motor development and visual-spatial perception play in writing. Research shows that visuomotor coordination skills are directly related to writing fluency and accuracy (Seo, 2018; Martzog et al., 2019). Therefore, implementing such programs can be a valuable tool for supporting writing instruction, especially for children with delayed fine motor development.

This is a theoretical study; the nine examples of children's writing included are used illustratively rather than as empirical data and are therefore not generalizable. However, they help to concretize the alignment between theoretical models and Latvian educational regulations, thereby strengthening the theoretical contribution of the study and providing additional clarity on the links between theory, policy, and pedagogical practice.

Conclusions

The development of fine and gross motor skills forms a critical foundation for writing skill acquisition in preschool. Writing does not develop in isolation – it is influenced by movement coordination, spatial perception, and symbolic thinking, all of which must be purposefully and systematically developed.

The Latvian preschool education system provides a structured foundation for evaluating writing readiness. However, integrating theoretical models such as the three-domain approach allows for a deeper understanding of children's cognitive and expressive development.

Effective promotion of writing skills requires that educators understand each child's individual developmental level and are able to adapt tasks to meet those specific needs. Purposefully selected motor activities and a supportive environment enhance not only the acquisition of technical skills but also children's motivation and ability to express themselves in writing.

Multisensory and developmentally based programs, such as *Handwriting Without Tears* and *Write from the Start*, offer practical solutions for integrating movement, perception, and writing into everyday educational practice. The implementation of such approaches significantly strengthens children's ability to engage in meaningful written communication.

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PERSPECTIVE-TAKING, PERSONALITY, DRIVING BEHAVIOR, AND THEIR RELATIONSHIP TO RISK PERCEPTION IN TRAFFIC SITUATIONS

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ABSTRACT

Traffic accidents remain a serious global issue, and human factors are recognized as important contributors to the issue. Perspective-taking has shown positive outcomes in various social domains and has also received some attention in traffic psychology research. Studies suggest that lower perspective-taking levels are related to higher antisocial behavior in traffic contexts. Additionally, individuals with experience across multiple modes of transportation tend to be less involved in traffic accidents, an effect partially attributed to increased perspective-taking. The main aim was to examine whether perspective-taking is related to traffic situation evaluations, mainly in terms of risk perception and outcome prediction. A secondary aim was to investigate whether personality traits, dark triad traits, self-reported driving behavior, and demographic variables mediate the relationship between perspective-taking, risk perception, and outcome prediction. Two studies were conducted. Study 1 employed a cross-sectional design while study 2 replicated this design and included order manipulation to test whether considering perspective-taking beforehand would influence risk perception and traffic outcome prediction. In both studies participants evaluated traffic situation videos. The results did not reveal any significant effects of perspective-taking on video evaluations, except for confidence in one's evaluations. However, dark triad traits and self-reported driving behavior were significantly associated with traffic situation perception evaluations.

Keywords: *dark triad traits, personality traits, perspective-taking, risk perception, traffic psychology*

Introduction

Traffic accidents and fatalities are of great concern in Europe. In 2022 it was reported that more than 20 thousand people lost their lives in traffic related accidents (Directorate-General for Mobility and Transport, 2023). Estimates have been made that close to a half (41%) of all traffic accidents are associated with human related factors (Yaacob et al., 2018).

Traffic environment can require inquiring into other traffic agent mental states, where perspective-taking plays a key role (Sheppard et al., 2010). Additionally, people in

general tend to be egocentric in their thinking, that is people often assume that others' opinions, experiences, perceptions and other psychological processes will be like their own (e.g., Dunning & Hayes, 1996). Thus, perspective-taking could act to diminish this egocentric tendency. As well perspective-taking has been linked to various positive outcomes: improved social coordination (Galinsky et al., 2008), reduced prejudice expression (Galinsky & Moskowitz, 2000), higher motivation to engage in prosocial behavior (Batson et al., 2002), which all could be beneficial in traffic situations.

Perspective-taking and Risk Perception

Perspective-taking is defined as the ability to imagine the viewpoint of another person (Epley & Caruso, 2012). Perspective-taking can further be subdivided into three distinct types: perceptual or visuospatial, cognitive, and affective perspective-taking (Enright & Lapsley, 1980). All perspective-taking types rely on the same abilities: (a) ability to realize that other social agents have mental states, (b) realization that these mental states could be different than one's own, (c) the ability to overcome one's inner egocentrism in favor of these other states (Mohr et al., 2007). In traffic contexts perspective-taking could play an important role, because a large proportion of traffic situations require one to correctly assess the spatial relationships between different traffic agents and what elements of the traffic situation are visible to different traffic agents and thus to anticipate the behavior of these agents correctly (Nakai & Usui, 2017).

Traffic situations entail many aspects, of which one is inherently social. A lot of situations on the road require interaction between multiple traffic agents, whereby for efficient interactions one needs to be able to make somewhat accurate assessments of the intentions of other road users and to be able to predict the potential actions of these other users (Sheppard et al., 2010). Just measuring the act of taking others into account shows positive effects. For example, a study by Austers and colleagues (2025) found that individual differences in perspective-taking when in traffic situations are associated with lower self-reported violations, and one's readiness for others' mistakes in traffic situations is associated with lower self-reported lapses and errors.

Some indirect evidence exists where people with experience across multiple different transportation modes show less traffic accident involvement concerning the modes of transport, they have experience with (Nakai & Usui, 2017). Nakai and Usui (2017) found that having a license of another transportation mode (e.g. motorcycle) was related to safer behavior towards that transportation mode when using a different mode of transportation. They argued that this result could be explained by the participants' increased ability to understand the perspective of the other mode of transportation better because of their own experience with it. Another study exposed drivers to videos filmed from the motorcyclist's perspective found decreased negative attitudes and increased safer attitudes towards motorcyclists (Shahar et al., 2011). In a couple of simulation studies, using a simulated driving game to see if perspective-taking was related to prosocial behavior on the road, showed that lower perspective-taking levels were associated with higher anti-social driving behavior (e.g. not trying to avoid pedestrians; Ju et al., 2016; Uijong et al., 2019). Finally, a study (Dimdiņš et al., manuscript under review) directly manipulating

perspective-taking, found a very minor effect on increased risk perceptions of traffic situations. The same study found a stronger positive link between individual differences in perspective-taking and risk perception.

The present study

The main objective of this study is to understand whether individual differences in perspective-taking and manipulated perspective-taking can predict differences in traffic risk perception and outcome prediction.

To measure perspective-taking specifically in traffic context we used the Driver Situational Reflection Scale (DSRS; Austers et al., 2025). DSRS was chosen because it was developed specifically for traffic context. The scale is comprised of two subscales – (1) perspective-taking and (2) caution. Whereas perspective-taking measures the driver's tendency to reflect on other traffic members' point of view whilst driving, the caution scale measures one's readiness to react and consider other potentially unexpected situations. Both subscales show good internal reliability (above .8) in the original study and its content validity has been shown by the developing authors (Austers et al., 2025).

Additionally, we added various individual difference measures. Research shows that individual differences account for variability in driving behavior. For example, meta-analytical studies (e.g. Akbari et al., 2019; Luo et al., 2023) find that various big five traits relate to risky driving behavior. In addition, more deviant personality traits such as the dark triad traits have been shown to relate to risky driving. Dark triad traits in general can be described as self-serving, manipulative, and characterized by emotional detachment and aggressiveness. Dark triad traits include three subcategories – narcissism, psychopathy, and machiavellianism (Paulhus & Williams, 2002). In traffic context dark triad traits as well have shown links to riskier driving (Endriulaitienė et al., 2018) and aggressive driving (Burtäverde et al., 2016).

Finally, self-reported driving behavior and specifically measured via the driving behavior questionnaire (DBQ; Reason et al., 1990) has consistently been linked to various driving outcomes such as traffic accidents (e.g. Oluwadiya et al., 2020; Singh & Kathuria, 2023), erratic driving patterns, whereas lapses subscale showed a negative correlation with steering and throttle control performance (e.g. Zhao et al., 2012) and other driver characteristics like age, gender, and driving experience (Liu et al., 2021; Useche et al., 2021).

Based on the above, an additional aim was to test whether personality traits, self-reported driving behavior, and demographic variables interact with the relationship between perspective-taking and traffic risk perception and outcome prediction.

Study 1 predictions

- H1. One's readiness to take the perspective of others (as measured by DSRS) positively relates to more risky predictions of outcomes of traffic situations.
- R1. How do control variables such as Dark Triad Traits, Big Five personality traits, Drivers' Behavioral patterns, and demographic variables relate to evaluating outcomes of traffic situations?

Method

Participants

A total of 154 participants with a valid driving license (self-reported) took part in the study sampled via social media (e.g. Facebook), 46.1% being female with the age ranging from 19–76, with the mean age being 44.69 with a standard deviation of 13.62. On average, the participants had a driver's license for 20.67 years with a standard deviation of 12.59.

Measurements and Materials

To measure risk perception, 8 traffic situations were presented to participants in the form of a video. The situations varied in length from 10 -20 seconds. Situations were acquired by placing an advertisement on social media platforms inviting individuals to submit dashboard camera footage of real-life traffic situations. The submitted videos were then screened and evaluated by the research team of the current study. The chosen situations ranged from city to highway contexts, thus representing various traffic conditions regarding speed, maneuvers, and traffic congestion. The final selection consisted of 4 videos with a hazardous situation and 4 control videos without any hazards. In a previous study by our research group, the hazardous videos were rated by participants to be riskier than the control videos, and they also showed differential eye movement patterns (Èvelis et al., manuscript under review), thus adding to the content validity of the videos. The videos were edited so that the participants would not see how the situation resolved in the video. The videos would stop on a frame before the resolution of the situation and the participants would be asked to predict the resolution of the situation by choosing one of two options. One of the options was the written description of the actual resolution that followed later in the video but was not shown to the participants. The other option for hazardous situations was an equally likely safe resolution of the situation, but for the control situations it was an equally likely hazardous resolution of the situation. All the actual behaviors depicted in the videos and the descriptions of alternative behaviors were independently rated by two experts to make sure that the alternatives described for each video were feasible and realistic, given the traffic situation depicted in the video. Participants' predictions were then classified as being correct or incorrect. The prediction was categorized as being correct if the actual continuation of the video was chosen and incorrect if the alternative prediction was made. According to this categorization, the proportion of correct predictions was calculated for each participant. In addition, for each situation, one of the two alternatives was pre-categorized to be riskier. Thus, for each participant, the proportion of risky choices was calculated based on whether they chose the risky option. Finally, after predicting the outcome of the traffic situation, participants were asked two additional questions about the outcome option they chose:

- (1) Accident likelihood – What is the likelihood of an accident if the situation unfolds in the way you predicted? (0–100%)
- (2) Accident likelihood confidence – How confident are you about your prediction of an accident? (0–100%)

To measure perspective-taking the Driver Situational Reflection Scale (DSRS; Austers et al., 2025) was used. The scale has eight questions in total, comprising two subscales – perspective-taking (sample items “When I see a cyclist, I wonder how I would act in his place.”) and caution (sample item “I am cautious because dangerous situations on the road can arise completely unexpectedly.”), each consisting of 4 questions. The questions are rated on a 7-point Likert scale, from “Very uncharacteristic to me” to “Very characteristic to me”.

To measure driving behavior, a modified version in Latvian language of the Driver Behavior Questionnaire (Reason et al., 1990) was used (Reņģe et al., 2012). The modified version consisted of 29 items comprising 3 subscales: (1) violations (sample items “Become angered by driver and given chase”, “Raced to beat other driver”), (2) errors (sample items “Missed give way signs”, “Attempt to overtake a vehicle making a left turn”), and (3) lapses (sample items “Forget where I parked my car”, “Misread signs and get lost”). Measured on a 1- 7 Likert scale, where 1 is never and 7 is very often.

To measure big-five personality traits, Ten Item Personality Inventory (TIPI; Gosling et al., 2003) was used. Measuring Openness, Conscientiousness, Extraversion, Neuroticism, and Agreeableness with two items per factor. Participants have to indicate on a 7 – point Likert scale how much do they agree that a trait description characterizes them. Where 1 is “Completely disagree” and 7 is “Completely agree”. The inventory has been translated to Latvian language by Reņģe and colleagues (2012).

To measure dark triad traits Short Dark Triad Scale (SDTS; Jones & Paulhus, 2014) was used. The scale consists of 27 items, measuring three facets – Psychopathy, Machiavellianism, and Narcissism with 9 items each. Measured on a 5 – point Likert scale ranging from completely disagree to completely agree. The scale has been translated into Latvian by Baldiņa (2017).

Procedure

Participants were recruited via social media posts, and by posting participation links on various group forums. The survey was hosted on QuestionPro platform. First the participants filled out demographic questions, then proceeded with watching 8 videos and answering questions about each video. After watching the videos, participants filled out DSRS, DBQ and TIPI. After finishing everything, participants were debriefed, they were shown the full videos with the endings for each. The research methodology was approved by the Humanitarian and Social Science Ethics Committee of the University of Latvia (approval no. 71-46/76), which applied to both study 1 and study 2. For data handling and statistical analysis, R version 4.3.2 (R Core Team, 2023) and RStudio version 2024.04.1 were used.

Results

Initially, the descriptive statistics and Cronbach alpha scores for the main variables were calculated (see Table 1).

Table 1 Descriptive statistics and Cronbach alpha scores for the main variables ($N = 154$)

Variable	<i>M</i>	<i>SD</i>	<i>alpha</i>
Traffic video evaluations			
Correct predictions	0.48	0.16	
Risky predictions	0.44	0.21	
Accident likelihood	42.66	21.87	
Accident likelihood confidence	70.32	17.43	
Big Five traits			
Openness	4.97	1.17	
Conscientiousness	5.37	1.14	
Extraversion	4.25	1.39	
Agreeableness	5.29	1.09	
Neuroticism	4.59	1.37	
Dark triad traits			
Machiavellianism	4.12	1.04	.74
Narcissism	3.05	0.86	.58
Psychopathy	2.19	0.87	.63
DSRS			
Caution	5.78	1.05	.81
Perspective-taking	4.80	1.53	.84
DBQ			
Violations	2.57	0.93	.81
Lapses	2.31	0.77	.73
Errors	1.79	0.62	.81

As can be seen in Table 1, all the scales except Narcissism reached acceptable reliability scores since Cronbach alpha scores were above .60, Narcissism scale was just below .60 which would be considered poor reliability and thus should be interpreted with caution (Izah et al., 2023).

To test the first hypothesis that “one’s readiness to take the perspective of others (as measured by DSRS) positively relates to more risky predictions of outcomes of traffic situations” a correlation analysis was done (see Table 2).

Correlation analysis did not reveal any significant correlations between DSRS Caution and Perspective-taking subscales with any of the metrics measured regarding traffic situations. Only the DSRS subscales caution and perspective-taking showed a strong positive correlation.

To answer the research question of “How do control variables such as Dark Triad Traits, Big Five personality traits, Drivers’ Behavioral patterns, and demographic variables relate to evaluating outcomes of traffic situations?”, first a stepwise multiple regression (both directions) was performed to assess whether Big Five traits, Dark Triad traits, self-reported

Table 2 Pearson correlations between DSRS and video ratings ($N = 154$)

Variable	Caution	Perspective-taking
Perspective-taking	.67***	
Correct predictions	.00	.01
Risky predictions	-.13	-.12
Accident likelihood	.02	.03
Accident likelihood confidence	.08	.03

Note. *** $p < .001$

Table 3 Results of stepwise multiple regression (both directions) for predicting correct answer proportion from Big 5, Dark triad, self-reported driving behavior, and demographic variables ($N = 154$)

Predictor	<i>b</i>	<i>SE B</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
Openness	-0.16	0.09	-0.15	-1.71	.089
Narcissism	0.34	0.12	0.23	2.72	.007
Driving license years	0.00	0.00	0.14	1.83	.069

Note. Model summary statistics for the final step: $R^2 = .07$, $F(3, 150) = 3.83$, $p = .011$.

Table 4 Results of stepwise multiple regression (both directions) for predicting risky answer proportion from Big 5, Dark triad, self-reported driving behavior, and demographic variables ($N = 154$)

Predictor	<i>b</i>	<i>SE B</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
Extraversion	-0.14	0.09	-0.12	-1.51	.134
Psychopathy	0.29	0.16	0.15	1.75	.082
Violations	0.22	0.16	0.12	1.40	.164
Age	-0.02	0.01	-0.14	-1.70	.091
Gender	-0.57	0.26	-0.17	-2.21	.029

Note. Model summary statistics for the final step: $R^2 = .16$, $F(5, 148) = 5.59$, $p < .001$.

Gender coded 0 = Male; 1 = Female

driving behavior, and demographics could predict the proportion of correct predictions. A total of 14 variables were used in the model. The final step can be seen in Table 3.

The final step of the regression analysis kept three variables – Openness, Narcissism, and the number of years one has a driving license. The only significant predictor though was Narcissism, showing that people higher in Narcissism made more correct predictions.

Another stepwise multiple regression (both directions) was performed to assess whether Big Five traits, Dark Triad traits, self-reported driving behavior, and demographics could predict the proportion of risky predictions. Again, a total of 14 variables were used in the model. The final step can be seen in Table 4.

The final step of the regression model retained five variables – Extraversion, Psychopathy, Violations, Age, and Gender. The only significant predictor of the five was Gender, showing that males more often chose the riskier option provided when evaluating the videos.

Study 2 Predictions

- H1a: Completing the DSRS but not the DBQ before the video evaluation will increase the average riskiness rating of the predicted outcome and the proportion of risky predictions.
- H1b: Completing the DSRS or the DBQ before the video evaluation will increase the average riskiness rating of the predicted outcome and the proportion of risky predictions.
- H2: One's readiness to consider others' perspectives (as measured by DSRS) positively relates to higher risky prediction proportion of traffic situation outcomes.
- R1: How do control variables such as Dark Triad Traits, Big Five personality traits, Drivers' Behaviour patterns, and demographic variables relate to the evaluation of traffic situation outcomes?

Method

Participants

Participants were sampled using a research agency. A total of 352 participants took part in study two, 48% being female with the age ranging from 19 – 76, with the mean age being 45.80 with a standard deviation of 14.36. On average, the participants had a driver's license for 22.00 years with a standard deviation of 13.90.

Measurements and Materials

The measurements and materials used were the same as in study 1. The only difference was that an additional metric was added to the video evaluations. Additionally, we were asked to rate how dangerous the situation depicted was after watching each video. The riskiness of the situation was rated on a 7 – point Likert scale where 1 – safe to 7 – very dangerous.

Procedure

The difference from the first study was in that the participants were randomly assigned to three groups. The groups differed in the order they filled out the tasks. Experimental group 1 did the DSRS questionnaire before they rated the videos and then proceeded to fill out the other measures. Experimental group 2 first did the DBQ questionnaire and then proceeded to fill out all the other measures. Finally, a control group initially filled out the demographic questions and then proceeded to fill out the rest of the measures. In any other regard, the procedure was the same as in the first study.

Results

The descriptive statistics for the main variables can be seen in Table 5. Additionally, to what was asked in the first study, in study two the participants rated how risky the situations were, and in general the situations were rated as being slightly above average riskiness.

Table 5 Descriptive statistics for the main study variables ($N = 352$)

Variable	<i>M</i>	<i>SD</i>
Traffic video evaluations		
Correct predictions	0.43	0.16
Risky predictions	0.42	0.19
Accident likelihood	44.03	19.20
Accident likelihood confidence	66.29	16.15
Average riskiness rating	4.10	0.90
DSRS		
Caution	5.89	0.94
Perspective-taking	4.80	1.47
Dark triad		
Machiavellianism	3.82	1.02
Narcissism	3.55	0.89
Psychopathy	2.49	0.85
DBQ		
Violations	2.44	0.88
Errors	1.66	0.45
Lapses	2.08	0.67
Big Five traits		
Openness	4.80	0.92
Conscientiousness	4.94	0.76
Extraversion	4.33	1.02
Agreeableness	5.12	0.78
Neuroticism	3.59	1.03

Table 6 Pearson correlations between DSRS and video ratings ($N = 352$)

Variable	Caution	Perspective-taking
Perspective-taking	.44***	
Correct predictions	.06	.04
Risky predictions	-.04	-.04
Accident likelihood	.10	.01
Accident likelihood confidence	.12*	.01
Average riskiness rating	.07	.08

Note. * $p < .05$, *** $p < .001$

To test the first hypothesis that “DSRS scales Caution and Perspective-taking will be correlated with traffic situation evaluations” Pearson correlation analysis was done (see Table 6). The only significant correlation was between Caution and Accident likelihood confidence, showing a weak positive correlation.

Table 7 Descriptive statistics and One-Way ANOVA results for experimental and control groups

Variable	Control group		DBQ		DSRS		F(2, 349)	η^2
	M	SD	M	SD	M	SD		
Correct predictions	3.39	1.21	3.48	1.38	3.44	1.34	0.44	.00
Risky predictions	3.36	1.63	3.23	1.44	3.41	1.58	0.14	.00
Accident likelihood	44.93	18.67	43.70	21.54	43.55	17.61	0.18	.00
Accident likelihood confidence	66.85	15.33	69.53	15.10	63.10	17.17	4.93	.03
Average riskiness rating	4.03	0.83	4.33	0.97	3.98	0.87	5.16	.03

Table 8 Results of stepwise multiple regression (both directions) for predicting correct answer proportion from Big 5 traits, Dark triad traits, self-reported driving behavior, and demographics (N = 352)

Predictor	b	SE B	Beta	t	p
Openness	-0.13	0.08	-0.09	-1.74	.082
Gender	0.23	0.14	0.09	1.66	.098

Note. Model summary statistics for the final step: $R^2 = .07$, $F(3, 150) = 3.83$, $p = .011$.

Further to test the hypothesis that filling out the DSRS questionnaire first as compared to the control group or filling out DBQ first will lead to higher risk perception and higher proportion of risky predictions a One-Way ANOVA was conducted (see Table 7).

From the One-Way ANOVA results it can be seen that none of the groups differed statistically significantly in either of the video evaluation measures. Thus, not providing support for the hypothesis that the initial filling out of DSRS will lead to higher risk perception or higher proportion of risky predictions.

To answer the research question of whether personality measures both Big 5 and Dark triad traits, self-reported driving behavior, and demographic variables relate to correct and risky response proportion when evaluating traffic situations stepwise multiple regression was carried out. First a stepwise multiple regression (both directions) was performed to assess whether Big Five traits, Dark Triad traits, and demographics could predict the amount of correct predictions. A total of 14 variables were used in the model (final step can be seen in Table 8).

The final step of the regression analysis kept two variables – openness and gender. Though none of the variables in the final step reached significance.

Another stepwise multiple regression (both directions) was performed to assess whether Big Five traits, Dark Triad traits, self-reported driving behavior, and demographics could predict the amount of risky predictions. Again, a total of 14 variables were used in the model (final step can be seen in Table 9).

Table 9 Stepwise multiple regression (both directions) for predicting risky answer proportion from Big 5, Dark triad and demographics ($N = 352$)

Predictor	<i>b</i>	<i>SE B</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
Agreeableness	-0.30	0.12	-0.15	-2.48	.014
Psychopathy	-0.42	0.12	-0.23	-3.57	< .001
Narcissism	0.21	0.10	0.12	2.19	.029
Violations	0.32	0.11	0.18	2.83	.005
Errors	-0.56	0.22	-0.16	-2.58	.010
Gender	-0.53	0.17	-0.17	-3.10	.002

Note. Model summary statistics for the final step: $R^2 = .16$, $F(5, 148) = 5.59$, $p < .001$.

Gender coded 0 = Male; 1 = Female

The final step of the regression model retained six variables – agreeableness, psychopathy, narcissism, violations, errors, and gender. All the variables in the final step reached significance. Agreeableness, psychopathy, errors and gender showing a negative relationship, but narcissism and violations showing a positive relationship with proportion of risky answers.

Discussion

Two studies were carried out with the aim to test if perspective-taking is related to traffic risk perception and whether various individual differences like personality traits, dark triad traits, self-reported driving behavior and demographics mediate this relationship. Study 1 followed a cross-sectional design and tested the hypothesis whether perspective-taking and caution (as measured by DSRS) are related to risk perception. Study 2 went a step further by adding experimental manipulation to see whether thinking about perspective-taking questions by filling out the DSRS questionnaire first will lead to differences in risk perception.

Study 1 did not find any support for perspective-taking and caution being linked to risk perception, while study 2 found only one very weak association between perspective-taking and accident likelihood confidence. Therefore, overall, our study did not find support for the hypothesis that perspective-taking as an individual difference is related to risk perception. Within study 2, the order of filling out the questionnaire as well did not show any effect on risk perception. Additional study by our research group carried out with the same traffic video stimuli and using DSRS measurement found weak associations between caution and perceived riskiness (Dimdiņš et al., manuscript under review). Although perspective-taking is assumed to facilitate the ability to correctly understand the affordances another person has in a given situation (Creem-Regehr et al., 2013), Eyal and colleagues (2018) note that experimental testing finds little evidence in the idea that perspective-taking increases the ability to intuit another's mental states. They even argue that perspective-taking might not increase or even show detrimental effects to one's ability to predict another's inner mental states. Their study additionally found an increase

in confidence in the accuracy of the prediction when perspective-taking was induced. Coincidentally, that is the only relationship we found between caution and video evaluations, where higher caution was related to higher confidence in one's prediction.

As for the research question "How do control variables such as Dark Triad Traits, Big Five personality traits, Drivers' Behaviour patterns, and demographic variables affect the evaluation of traffic situation outcomes?", Study 1 found that out of all the individual difference variables higher narcissism predicted more correct prediction proportion whereas study 2 did not find any significant predictors for correct prediction proportion. Study 1 found that gender was the only variable to predict a higher proportion of risky answers. Study 2, on the other hand, showed multiple significant predictors for risky answers – agreeableness, psychopathy, errors, and gender showing a negative relationship, but narcissism and violations showing a positive relationship. Thus, the results were not consistent across the studies and contradicted existing literature. For example, higher psychopathy predicted lower risky choices, but higher narcissism predicted higher correct answers and higher risky choices. Other studies have as well shown links to driving behavior for dark triad traits (e.g. Uijong et al., 2019), the results in those studies, though pointed to positive relationships with antisocial behavior (e.g., running over pedestrians). In the context of the current study, the dark triad trait relationship with some of the video evaluations could be more of an indication of the nature of the methodology rather than an actual relationship between the variables. It could be that individuals higher in psychopathy, characterized as more manipulative and image sensitive (De Brito et al., 2021), might try to represent themselves as more socially appropriate, hence choosing safer options when evaluating the situations.

The results of the current study further showed that violations were positively related, but errors were negatively related to risky choice proportion, making it hard to discern whether choosing more risky choices is beneficial or not to traffic safety. In both studies, males chose more risky answers than females. It might be that riskier mental models (McKenna & Crick, 1997) are more available to males as it has been documented that males tend to engage in more risky driving, but the ability to correctly predict the outcome of the situation was not different between the genders, similar results have been found in other similar studies, for example studies show that hazard perception skills do not differ between genders (e.g. Scrimgeour et al., 2011).

Limitations

The correct answer proportion was below 50% in both studies. Since there were only two choices to choose from, the observed result was lower than what one would expect by chance. This could mean that the traffic situations depicted in the videos were rather rare and not what one would generally expect. This would imply that the measurement might not actually capture risk perception ability. Additionally, since DBQ measures one's driving patterns which should be related to risk perception ability (e.g. Scialfa et al., 2013), the lack of relationship between DBQ subfactors and the correct answer proportion could also indicate the lack of validity of the videos used.

Suggestions for future research

In terms of traffic safety, various factors could play a role, and accounting for everything is unlikely to be possible. Nevertheless, future studies should aim for laboratory experimental designs with the aim to capture the perspective-taking effect. As the complexity of stimuli increases, successful answers on situation evaluation might depend on other factors, not our direct ability to identify the specific behavior. Additional studies that consider adding physiological measurements (e.g. HRV, EDA) or eye tracking measurements together with perspective-taking could indicate patterns or mechanisms on how perspective-taking allows us to analyze certain traffic situations. Then, combining that with personality and driving characteristics can shed light on why we lean toward safe or risky driving.

Conclusions

- Perspective-taking was not consistently related to traffic risk perception, only to confidence in one's choices, and priming perspective-taking experimentally did not show any differences.
- Individual differences, including personality traits and driving behavior, showed inconsistent and sometimes contradictory associations with risk perception across the two studies.
- Gender differences were observed in risky choices, with males choosing more risky responses, though prediction accuracy did not differ.
- The findings suggest that perspective-taking may not be a reliable target for interventions aimed at improving traffic risk perception.
- Future efforts should focus on more direct methods, such as training or simulations, to enhance traffic safety skills.

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CIVIC ENGAGEMENT: TERMINOLOGICAL CHALLENGES

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ABSTRACT

The concept of *civic engagement* in higher education remains terminologically diverse and often ambiguous. Scholars employ various synonyms, such as civic participation, community engagement, service-learning, and public work, which complicates their conceptual clarity and practical application. This paper examines and clarifies the conceptual and terminological understanding of civic engagement in academic discourse, proposing a working definition applicable to the Latvian higher education context. This study's central research question is: *How is civic engagement defined and interpreted in the scientific literature?*

A summative content analysis was conducted on 97 scholarly definitions published between 2000 and 2024 to address this. The analysis focused on identifying the key dimensions and recurring elements of the definitions. The findings reveal that *civic engagement* is a multidimensional phenomenon, involving both individual and collective action, as well as political and non-political participation, and voluntary contributions to the public good. It also encompasses values such as responsibility, solidarity, and active citizenship.

The study highlights the importance of terminological precision in differentiating *civic engagement* from related concepts, particularly *civic participation*, which often implies narrower or more institutionalised forms of involvement. Based on the analysis, the paper proposes a synthesised definition of *civic engagement*, emphasising its role in fostering democratic values, critical thinking, and socially responsible behaviour among students. This definitional clarity is intended to inform future research, policy development, and curriculum design in education.

Keywords: *civic engagement; civic participation; democratic participation; higher education; student involvement*

Introduction

Civic engagement (hereafter referred to as CE) is becoming increasingly important in contemporary higher education; however, its interpretation in the academic literature remains diverse and ambiguous (Hulbert & Harkins, 2024). Scholars define it using different concepts and synonyms, reflecting different approaches and understandings of CE. This terminological ambiguity calls for in-depth analysis and clarification.

To understand the fundamental origins of CE and the challenges associated with terminology, this research paper analyses and structures the meaning of CE, which is necessary for clear and precise communication within research, avoiding terminological ambiguities and inconsistencies in the use of the concept.

Recent data reveal significant challenges in developing civic engagement in Latvia. Studies show that students rate their civic competence as the lowest among six other transversal competences (Rubene et al., 2024). Only 20% of young adults (aged 18–30) are politically active, and 47% of students consider democracy the best form of government (Čekse, 2021; Čekse et al., 2023). Voter turnout remains critically low, with only 17% of residents having voted in the past five years, and just 31% believing their vote matters (Kažoka & Bērziņa, 2023). Moreover, trust in government institutions is below the OECD average, with only 29% of the population trusting the government and just 13% trusting political parties (OECD, 2024). These indicators highlight the need for strengthened civic education, including CE, and the active role of higher education institutions in fostering CE.

The study aims to explore CE in the scientific literature, identify its main characteristics, and develop a terminologically precise definition suitable for the Latvian context. The research question is: How is CE defined and interpreted in the scientific literature? To answer this question, 97 scholarly sources were analysed using thematic and summative content analysis. This approach enables the structured collection of different definitions, identifying recurrent themes and classifying them according to relevant conceptual features. The study's results contribute to the scholarly discourse on the meaning of CE and offer a structured approach to terminological precision in research and practice.

Literature review

The concept of CE is complex and polyonymous (Jacoby, 2009), meaning it has different meanings and/or is defined by different terms. The available scholarly literature on CE in English reveals a range of synonyms used depending on the research context. This diversity complicates the research process and creates the potential for conceptual inconsistency. The most used synonyms for “civic engagement” in the English-language research literature are summarised below (see Table 1) and used depending on the context. Synonyms should be used responsibly and with care, as although they may be conceptually related to CE, their meanings can vary considerably, especially in the English-language academic literature. Just because two terms seem similar does not mean they can be used interchangeably without risking misinterpretation or conceptual inaccuracy, especially in research and academic writing.

Some scholars (Ekman & Amnå, 2012; Vargulis, 2021; Berger, 2009) argue that the concept of CE and related terms are not helpful for anything because of the wide range of definitions. Researchers support the idea that the term is used as a buzzword to encompass everything from voting to donating money, attending workshops in the local community, or participating in sports games. There is a lack of clarity about what CE means (Saltmarsh, 2005). CE is problematic due to its widespread popularity (Levine, 2007).

Table 1 Synonyms of the term “civic engagement” in the scientific literature

The most used synonyms for the English term “civic engagement” in scientific literature

Social capital, citizenship, democratic participation/citizenship/practice, public work/public problem solving, political engagement, community engagement, social responsibility, social justice, civic professionalism, public agency, community building, civic or public leadership, development of public intellectuals, preservation and expansion of the commons

Active participation in public life, civic responsibility, community service-learning, community-based research, engaged scholarship, service-learning, volunteerism

Source. Adapted from C. M. Cress & S. T. Stokamer “Civic Engagement in Higher Education” (2017); R. M. Battistoni “Civic Engagement across the Curriculum: A Resource Book for Service-Learning Faculty in All Disciplines” (2002); and P. Levine, *The Future of Democracy: Developing the Next Generation of American Citizens* (2007).

Second, there are ideological differences in how CE is perceived (Battistoni, 2002), for example, leftist academics may see civic education as patriotic and demonstrative, while more conservative academics may see CE as participation in activist programmes. The different views can create misconceptions and make the definition of CE contradictory and value-oriented. The controversy may affect different individuals both within and outside academia. Thirdly, the question of whether the aim of CE should be to build a socially just world is important, as terms such as “good society” and “common good” are conflated with social justice, leading to different interpretations of what justice means (Levine, 2007). Fourth, there is terminological confusion, where academics, students, the community or society at large do not understand whether community service and CE, for example, are synonymous (Jacoby, 2009), which calls for a systematic literature review that provides a detailed analysis of how CE can be defined.

To understand the meaning of the term CE, it is first necessary to look at and analyse the English vocabulary of “civic” and “engagement”. Translating the term “civic” from English, its meaning is “citizen-” or “citizen-” (Belzēja et al., 1995). Specifically, the conceptual interpretation of the term “civic” is related to the keywords “citizen” or “citizens”¹ (Oxford University Press, n.d.) and “city”, “citizenship”² (Oxford University Press, 1991) – that which belongs to or relates to a citizen, the duties of a citizen, that which is appropriate to a citizen.

Generally, the term “engagement” translates to “occupation” or “commitment” in English (Kalniņa et al., 2007). Hegna (2018) points out that the term can be considered as interest and initially has two meanings: first, engagement as activation, consent or participation, and second, the emotional side, which refers to interest and emotional involvement. It is worth noting that the first meaning is reflected in typologies of CE research. Analysing and combining the explanations available in the scientific literature, it can be concluded that the term is related to interest and commitment (Hegna, 2018; Simpson & Patterson, 2018), is an active and emotional activity (Morris, 2022) and involvement (Bignoux, 2020) in which there are two or more parties involved who

¹ Oxford English Dictionary, s.v. “civic (adj.),” July 2023. <https://doi.org/10.1093/OED/3288042650>

² Oxford Advanced Learners’ Dictionary. (1991). Oxford: Oxford University Press, p. 203.

define and jointly achieve a goal (Dippert et al., 2017) by interacting within a specific task (Adler & Goggin, 2005).

From a psychological perspective, the term “*engagement*” is a psychological process and an active contribution or motivational state (Herrada-Lores & Estrella-Ramón, 2019) aimed at acquiring knowledge and developing skills and abilities (Popescu et al., 2022). It involves reflection, exploration, evaluation, and a level of understanding, and it is associated with a sense of power and control (El Zoghbi, 2019). A psychological state experienced when engaging, interacting and immersing oneself in a particular task (Holmquest, 2021). Thus, engagement in the psychological sense of the term is a multidimensional process that encompasses cognitive, emotional and behavioural involvement, facilitating deeper learning and developmental experiences, while reflecting an individual’s active participation and motivation, which influences both the acquisition of knowledge and the feeling of control over one’s actions.

In educational culture, “*engagement*” is a broadly defined term that refers to (Majdoub, 2022) the encouragement of students to engage in academic activities, learning communities and interact with academic staff by dedicating time and resources (Cofer, 2021) and using active learning and collaborative skills (Piedra, 2020) to develop knowledge, skills and dispositions for learning content (Majdoub, 2022) and to influence the future (El Zoghbi, 2019). Specifically, in higher education, this encompasses student engagement in academic life, approaches to developing engaging curricula, and understanding an engaged university – one that actively engages with economic and civil society, embracing mutual listening, reciprocity, and dialogue that focuses on the well-being of the community. It encompasses both the promise of action and the actual outcome of action. It is usually a permanent rather than a temporary situation, and engagement rules and regulations exist in specific contexts. Engagement has potential, promise, risk and uncertainty, often because it involves the individual adapting and being willing to change. It involves intense, thoughtful and reasoned interaction with the broader world (Boland & McIlrath, 2008). On the institutional side of higher education, “*engagement*” is defined as a new partnership between academia and civil society, emphasising the need for higher education institutions to work more closely with other organisations (Zlotkowski, 2007), ensuring knowledge transfer and knowledge sharing, so that other actors involved also become participants in the dissemination and use of knowledge (Garretson et al., 2020).

The Latvian term “*pilsoniskā līdzdalība*” (the English term “*civic participation*” is also considered synonymous in Latvian (Bela & Rasnača, 2023) and in foreign literature (Scerri & James, 2010), its meaning is “*civic engagement*”, which is the involvement of citizens in the discussion, decision-making and implementation of issues of importance to society. It is one of the fundamental principles of a democratic country and of the European Union. CE can be implemented at the local, regional, national and international levels. It can include participation in elections, activities in non-governmental organisations, volunteering, and involvement in informal civic activities to defend one’s interests or address public concerns. CE also involves citizens engaging with public authorities

in a multifaceted way and participating in decision-making processes at different levels that contribute to positive societal change and improve quality of life. CE in social work is essential because it ensures that representatives of social groups and communities can adopt and implement social policy decisions that affect specific groups or communities. It also involves community members in resource planning and the development of social services to ensure that social support and services best meet the population's needs (Bela & Rasnača, 2023). For example, higher education institutions promote CE in a significant way by incorporating it into their missions, curricula, and structures. It is closely integrated into institutional policies and governance structures, shaping educational strategies and promoting student participation (Evans et al., 2018). Similarly, research on the institutionalisation of CE highlights that universities can systematically incorporate it into their core functions by developing structured programmes that align with organisational goals (Batten et al., 2017). Higher education institutions play a key role in promoting democratic values and social responsibility through organised initiatives, further strengthening the institutional nature of CE (Hulbert & Harkins, 2024). These conclusions collectively indicate that CE extends beyond individual involvement, functioning as a structured and institutionalised process that promotes democratic values and societal transformation.

When examining English-language definitions of the synonym term “*civic participation*”, it is often described as political and social activity (Hirzalla & Banaji, 2018) or as an active civic position (Scerri & James, 2010), involving a willingness to take part in social mechanisms through which individuals or groups engage in processes and issues affecting the community, aiming to protect its values and interests (Witte et al., 2017; Song, 2019). As previously mentioned, “*civic participation*” and “*civic engagement*” are frequently used interchangeably in English and Latvian. However, there is a subtle difference in meaning: “*civic engagement*” typically emphasises citizen initiative and active involvement in society, whereas “*civic participation*” is considered a more neutral term (Ekman & Amnå, 2012). Some scholars argue that these terms are not accurate synonyms, explaining that “*participation*” is often interpreted as observable civic behaviour and therefore used to refer to acts of civic participation. In contrast, “*engagement*” refers to the interest, awareness, knowledge, beliefs, opinions, attitudes, or emotions related to political or civic matters (Barrett & Brunton-Smith, 2014). According to Barrett & Brunton-Smith (2014), “*participation*” refers to collaborative actions aimed at addressing social problems, including membership in civic organisations, attending community meetings, volunteering, and donating to charity. On the other hand, “*engagement*” includes following news across media platforms (newspapers, magazines, television, radio, internet), knowledge about politics and civic topics, understanding political and civic values, and forming opinions and attitudes toward civic and political events and processes. Other researchers (Hauser, 2000; Putnam, 1995) define *civic participation* as encompassing voting, social and political activism, and volunteering. The author notes that within the scope of this research, the focus was on the term “*civic engagement*” when conducting keyword-based literature searches and analysis, rather than “*civic participation*”.

Table 2 Typology of specific definitions of CE

Civic engagement as service for the public good	Civic engagement as a collective action	Civic engagement as political involvement	Civic engagement as social change
Civic engagement is an individual's duty to assume civic responsibilities by actively participating, either alone or with others, in voluntary activities that strengthen the local community (Diller, 2001).	Civic engagement can be defined as a means through which an individual, by participating in collective action, influences the broader civil society (Van Benschoten, 2001). Civic engagement is an activity in which people come together to fulfil their role as citizens (Diller, 2001).	Civic engagement refers to the rediscovery of politics and public life, where citizens speak and act together as members of a community (Ronan, 2004).	Civic engagement refers to the active participation of citizens in community life, helping to shape its future. It necessarily includes dimensions of social change (Crowley, 2011).

However, it is important to recognise that in some scholarly publications, the terms are used interchangeably (Artamonova & Fomchenkova, 2021).

To understand the essence of CE, it is necessary to examine its defining characteristics and their diversity in various academic and practical contexts. CE includes individual and collective actions that promote societal development and strengthen democratic processes. It can manifest in various forms, from political participation and active citizenship to volunteer work and community initiatives. The term “*civic engagement*” refers to the involvement of members of society in discussing, making, and implementing decisions on issues significant to society, without distinguishing between whether individuals or external actors initiate the action.

Adler and Goggin (2005) categorise CE definitions into two groups: specific definitions (which limit the definition to a particular field or type of activity) and broad definitions (which are more inclusive). Separate examples of specific CE definitions are compiled in Table 2 (see Table 2).

Definitions that frame CE as a public service emphasise participation in voluntary service within one's local community, where the individual acts independently or as a group member. CE as collective action refers specifically to group-based efforts aimed at improving society. Definitions conceptualising CE as political involvement include collective action and activities related to governmental processes and decision-making. Meanwhile, CE as a social change approach highlights that tangible social transformations can occur through active participation in community life, shaping the community's future (Adler & Goggin, 2005).

Table 3 presents several examples of broad definitions of CE that are inclusive and allow for more expansive interpretation of the concept (see Table 3). These specific definitions have been cited ten times in scholarly publications and included in the comprehensive collection of 97 definitions.

Table 3 Examples of broad definitions of CE

R. P. Adler, J. Goggin (2005)	T. Ehrlich (2000)	B. Jacoby (2009)
Civic engagement refers to how an active citizen participates in community life to improve conditions for others or to help shape the community's future. It involves citizens interacting with their society and government.	Civic engagement means working to transform the community's civic life while developing a combination of knowledge, skills, values, and motivation to make that happen. It involves enhancing the quality of life in a community through both political and non-political processes	An activity based on an elevated sense of responsibility toward one's community. It includes a broad range of actions, including the development of civic awareness, participation in shaping civic society, and contributing to the common good. It also encompasses the concepts of global citizenship and interdependence

By synthesising the three definitions outlined above, it can be concluded that CE, in its broader dimension, is characterised by the following features: 1) active participation in community life aims to improve community members' conditions and quality of life and contribute to the community's future; 2) the need to develop knowledge, skills, values, and motivation that support civic life and highlight the role of education, lifelong learning, and personal development; 3) interaction with both society and government; 4) a wide range of activities, including political and non-political engagement forms; 5) a sense of responsibility toward the community, not only at the local level but also nationally and globally.

In summary, the theoretical findings reveal that CE is a multidimensional concept whose interpretation varies depending on context, language, and research approach. This diversity underscores the need for precise terminology and conceptual consistency in future research.

Methodology

As part of the study, a systematic review of scholarly literature in English was conducted using the keywords "*civic engagement in higher education*" across two major academic databases: Web of Science and Oxford Academic. The PRISMA method was used to ensure a systematic and transparent literature selection process, which helps to document the flow of identified and excluded studies. It included sources in the study (Page et al., 2021) and additional sources, including books, education policy documents, and dissertations. In total, 309 sources were reviewed, of which 97 were included (see Figure 1) in the final analysis based on relevance criteria (90 articles and 7 book sources). The main reasons for exclusion were a lack of focus on the concept (e.g., no definition of civic engagement or no relation to the higher education context). The time frame covered 2000 to 2024, which marks a significant development of the concept in global educational discourse.

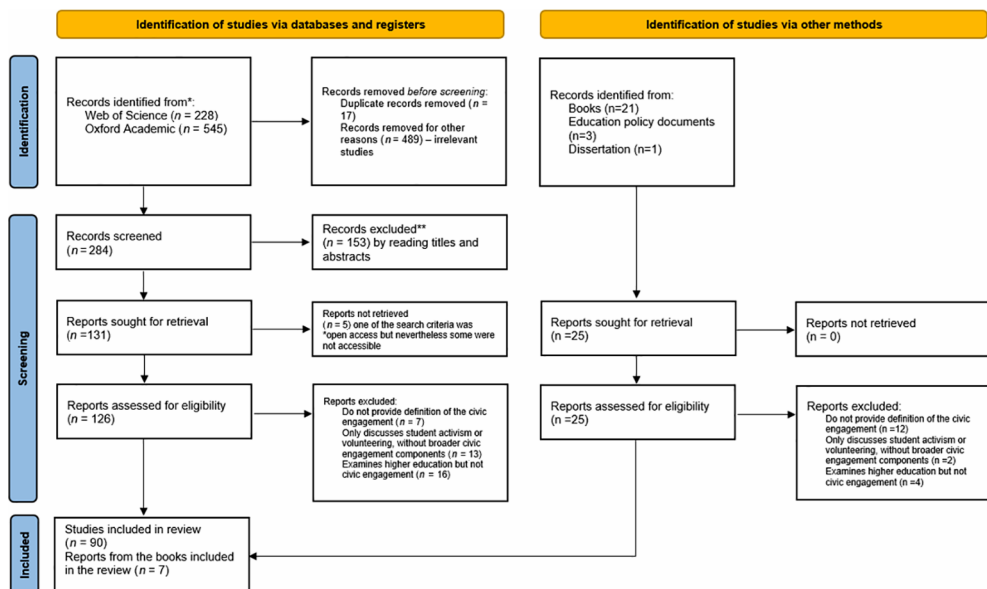


Figure 1 PRISMA Flow Diagram of Study Selection Process

The literature review used thematic analysis, identifying recurring themes, motifs, and characteristic elements within textual data. This approach is beneficial for analysing definitions and discourses around a concept such as CE, offering a flexible and systematic framework for exploring patterns of meaning across texts (Braun & Clarke, 2022).

Ninety-seven definitions and conceptualisations were collected and structured chronologically and thematically. Recurrent features were identified, such as types of engagement, values, goals, the notion of public good, and the role of students. A summary and relevant keywords accompanied each source to facilitate comparability. The thematic analysis followed Braun and Clarke's six-phase approach: familiarisation with the data, generation of initial (manual) codes, development of themes, reviewing themes, naming and defining themes, and presenting the findings (Braun & Clarke, 2022). A summative content analysis was also applied to better understand how CE is used in the literature. This approach begins with a quantitative phase, counting specific terms and phrases in the texts, and proceeds with a qualitative interpretation. It helps reveal the contexts and meanings of the term and associated values and strategies (Hsieh & Shannon, 2005).

By combining thematic and summative content analysis, this study ensures both a deeper conceptual understanding and a broader overview of how the term CE is applied across different academic contexts.

Results

Analysing a wide range of definitions was essential to gaining a comprehensive and multidimensional understanding of CE by identifying core characteristics and recurring

patterns across various contexts. The conceptual descriptions of the term reveal the following key features:

- CE is important in strengthening democracy (Maiello et al., 2003) and fostering democratic societal values (Torney-Purta et al., 2015).
- CE entails personal development and includes or promotes the development of knowledge, skills, values, and motivation necessary to support community civic life. It is a significant component of individual growth (Ehrlich, 2000; UNESCO, 2014).
- CE is characterised by community involvement to promote the community's well-being, through actions or behaviours that address societal issues and contribute to the development of society at local, national, and global levels (Diller, 2001).
- CE as a component of higher education refers to a) *an institutional mission – the “third mission” of higher education institutions (HEIs)* – where universities actively engage with their local communities through research, education, and service, assuming responsibility for the society they serve. Mission-related activities include civic and social engagement, technology and innovation transfer, and entrepreneurship (Gerholz et al., 2018; Brandt et al., 2018); b) *a pedagogical method, an educational approach, and/or a learning outcome*, depending on HEIS's mission, traditions, and institutional culture.
- CE is defined as voluntary individual (Gottlieb & Robinson, 2002; Campbell, 2006) or collective action (Adler & Goggin, 2005; Cress, 2012; Medne et al., 2024), and/or civic behaviour (Levine, 2007; Bowman, 2011; Zaff et al., 2011), which can be political (Hauser, 2000) or non-political (Greenfield et al., 2021). Such actions can occur locally, nationally, or globally (Tarman & Kilinc, 2023).
- CE may be defined as service for the public good, whether expressed through individual motivation and self-expression or collective involvement (e.g., student groups participating in public service initiatives).
- CE involves social change within society (Welch, 2007) and resolving community-level social issues.
- CE can be understood as a professional competence (Levine, 2007), encompassing various domains that build citizens' understanding of their role in a democratic society. It may also be regarded as a goal supported by the development of civic competence. In the Latvian context, CE is one of the six transversal competencies in general and higher education (Ministru kabinets, 2019). In general education, these include critical thinking and problem-solving, creativity and entrepreneurship, self-directed learning, collaboration, civic engagement, and digital literacy. In higher education, transversal competences include digital, research, innovation, entrepreneurship, global, and civic competence (Rubene et al., 2024).
- CE is also expressed through (civic) behaviour (Gottlieb & Robinson, 2002; Epstein et al., 2021; Zaff et al., 2011) and/or a mindset fostering a sense of community responsibility.

Table 4 Frequency of keyword phrase usage in the literature analysis

Code phrases	Frequency of occurrence
Foundational element of democracy and a component that promotes democracy	12
Personal growth/development and a factor that includes and/or promotes knowledge, skills, values, and motivation	19
Involvement in the community and a factor that promotes community well-being and/or social change	38
Political and/or non-political engagement	30
Individual and/or collective participation	28
Component of higher education – teaching approach, pedagogical method, learning outcome, third mission	24
Public service / Work for the common good	16
Voluntary activity	7
(Civic) behaviour and/or way of thinking that fosters a sense of responsibility toward the community	11
Driver of global change	7
Competence (professional and/or civic)	2
Domain of identity formation	2

Source. Own research.

Following the synthesis and analysis of CE definitions, the identification of key characteristics, and the theoretical framework for how Adler and Goggin (2005) divided CE definitions, the author grouped the terms into twelve categories based on keywords that reflect and define the essence of CE in each publication (see Table 4).

The frequency analysis of 97 definitions highlights the multidimensional nature of civic engagement (CE) and its conceptual consistency across diverse contexts. The most cited feature – community involvement and contribution to societal well-being – reflects CE’s deep link to collective responsibility and the public good (Diller, 2001; Welch, 2007). Participation was characterised as political and non-political (Hauser, 2000; Greenfield et al., 2021), and as involving individual or collective actions (Arvanitidis, 2017; Cress, 2012; Medne et al., 2024).

Many definitions emphasise personal development and promoting civic knowledge, skills, values, and motivation (Ehrlich, 2000; UNESCO, 2014; Lannegrand-Willems et al., 2018), which are essential for fostering responsible citizenship. Civic engagement was also frequently connected to higher education, particularly through institutions’ “third mission” of community partnership and social responsibility (Gerholz et al., 2018; Brandt et al., 2018; Dipholo & Tshishonga, 2022; Al-Amin & Gazar, 2020). This integration positions CE as both an educational strategy and a structural commitment.

Recurring elements such as voluntarism and public service further emphasise CE as a value-driven process (Gottlieb & Robinson, 2002; Hedin, 1989; Tansey, 2012), often motivated by altruism, trust, and solidarity (Uslaner, 2004; Jankowski, 2007; Beyerlein & Vaisey, 2013).

These behaviours, typically unpaid and non-compulsory, contribute to community well-being and democratic life (Verba et al., 1995; Tolbert et al., 2003; Parvin & Saunders, 2018).

Although less frequently cited, CE was also framed as a competence, both civic and professional, and a factor in identity formation, particularly among youth and students (Levine, 2007; Liu et al., 2018; Crocetti et al., 2012; Crocetti et al., 2014). This aligns with perspectives that highlight the developmental nature of CE as both an external practice and an internalised mindset (Zaff et al., 2011; Epstein et al., 2021). Finally, some scholars point to CE's potential role in addressing global challenges and promoting cross-cultural understanding, thereby positioning it as a driver of global change (Bowman, 2011; Castellanos & Cole, 2015). These broader interpretations signal a need for further empirical exploration of how CE is expressed across contexts and its implications for policy and education (Doolittle & Faul, 2013).

These insights reinforce CE as a complex, value-laden construct that merges individual action with institutional structures, and behavioural expression with personal growth. The frequency data provide a foundation for developing a more unified, context-sensitive framework to guide future research, policy, and educational practice. This multidimensional understanding of CE highlights the importance of developing a conceptually grounded framework tailored to higher education. Such a framework can guide academic research and institutional practice and may serve as a foundation for further empirical research, policy development, and faculty professional development in the Latvian context.

Discussion

Definitions of CE are numerous and often discipline-specific or shaped by individual researchers' perspectives. With civic engagement across various institutions and organisations, the chosen term, definition, or approach should align with the institution's mission, culture, and traditions (Jacoby, 2009). There is no single, universally accepted definition or consensus regarding the term 'civic engagement' (Gibson, 2001), nor a fixed interpretation of the term itself. The definition of the term largely depends on the research perspective and the interests of the person or institution defining it (Adler & Goggin, 2005). CE is understood as a set of actions through which active citizens participate in improving community conditions to transform and shape the future of civic life. This includes interaction between citizens, society, and government. To foster improved quality of life within the community, individuals must develop knowledge, skills, values, motivation, and a heightened sense of responsibility, applying both political and non-political means of participation.

Based on the analysis of 97 definitions, the author proposes a definition of CE: "CE is defined as an active, multidimensional process involving both individual and collective actions aimed at promoting citizens' participation in community life, driving social change in society, and ensuring democratic involvement in decision-making

processes. It encompasses both political and non-political forms of participation and engagement, fostering collaboration between higher education, society, and organisations through knowledge exchange and transfer. It supports personal and skills development, as well as public service. Through structured and voluntary participation, CE contributes to strengthening democratic foundations, civic responsibility and competence, and the broader well-being of society.

Nevertheless, the definitional complexity raises important questions. For instance, should CE be considered primarily a set of *behaviours* (as implied by “*participation*”), or a broader *motivational and attitudinal orientation* (as conveyed by “*engagement*”) ? The data suggest both are relevant, but a growing consensus is that engagement must go beyond mere activity and encompass reflection, responsibility, and intentionality (Barrett & Brunton-Smith, 2014; Doolittle & Faul, 2013). For example, Putra, Annas, and Reni (2024) emphasise that service-learning programs in higher education promote academic, personal, and civic growth among students. However, their effectiveness depends on their quality and implementation. Lewing and Bunkowski (2022) highlight the importance of faculty professional development and collaboration between teaching and CE centres, which is essential for advancing civic and community-based pedagogical practices.

The most common characteristics of CE, as identified in this study, include active involvement in the community; a focus on democratic values; personal growth and the development of civic knowledge, skills, and motivation; engagement through both political and non-political means; voluntary participation; and CE’s integration into higher education as both public service and a reflection of civic responsibility. These dimensions align with established characteristics in the scholarly literature (Gil de Zúñiga & Valenzuela, 2012; Hilger, 2006; Verba et al., 1995), such as voluntariness, unpaid and altruistic participation, and collective civic action in the public sphere. They highlight CE as a value-driven process rooted in behaviour and responsibility.

This study has several limitations. First, the analysis was limited to English-language sources, which may restrict cultural diversity. Second, many definitions are context-specific, shaped by national education and political systems, and may not fully align with the Latvian context. Finally, theme identification might have involved some degree of researcher subjectivity.

Future studies should examine how the theoretically identified characteristics are reflected in the policies, curricula, and professional practices of higher education institutions to deepen the understanding of how CE is implemented. Such analysis would help assess the extent to which CE is integrated into educational processes and how it influences student development.

Conclusion

Numerous definitions of CE exist, often specific to fields or shaped by the perspectives of individual researchers. This study analysed 97 academic sources to clarify how higher education defines and interprets CE. The most prominent features of CE identified were

community involvement, promotion of social change, support for democracy, individual growth and competence development, acquisition of knowledge, values, and motivation, voluntarism, and participation in both political and non-political activities, as well as its role as a component of higher education. CE is also viewed as a form of (civic) behaviour and mindset, rooted in a sense of responsibility toward the community.

The findings of this study provide a conceptually organised foundation for understanding CE in higher education, which may serve as a reference point for researchers, policymakers, and faculty. Further research is needed to empirically evaluate how these key features are implemented in practice, within curricula, academic staff activities, and student experiences. Clarifying terminology and identifying core features of CE is essential for making the concept practically applicable and for encouraging institutions to reflect on their role in promoting civic values through education. This study provides a theoretical foundation for future research on civic engagement, as the integration and analysis of ninety-seven scholarly definitions represent a considerable scholarly effort and a significant contribution to the conceptual advancement of the field.

AUTHOR NOTE

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THE DEVELOPMENT OF DISTANCE EDUCATION IN LATVIA (1991–2004): HISTORICAL CONTEXT, METHODOLOGY AND COMPARISON WITH TRADITIONAL EDUCATION

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ABSTRACT

In the early 1990s, Latvia underwent significant political and social changes that also impacted the field of education. This article analyzes the overall development of the concept of distance education in Latvia from 1991 to 2004, highlighting its historical, socio-political context, teaching methodologies, use of technology, accessibility and flexibility, as well as challenges associated with quality assurance. It compares the distance education system of that period to the traditional face-to-face learning environment to better understand how the characteristics of these new educational forms influenced the learning process. Key findings indicate that although international initiatives and governmental support, particularly in collaboration with European Union programs, initiated the expansion of distance education, limited resources and uneven technological infrastructure hindered rapid development. Despite these challenges, distance education in Latvia offered opportunities for students who needed to balance professional or personal responsibilities with academic pursuits, thereby expanding access to education for various social groups, including those in remote regions or with special needs. Over time, the emergence of internet-based tools began to shift the focus from purely correspondence models to a more interactive, technology-driven approach, not only within European Union member states but also in Latvia. However, quality assurance and public trust remained critical areas of concern. This study's historical perspective highlights the early successes and setbacks that continue to inform the evolution of distance education in Latvia, emphasizing the ongoing necessity of thorough support systems, accreditation and quality assessment mechanisms, and strategic resource allocation for ensuring long-term sustainability and effectiveness.

Keywords: *distance education, educational reforms, technology in education, educational accessibility, quality of education, pedagogical innovations*

Introduction

In the 21st century, distance education has become a significant alternative to traditional schooling, particularly as its popularity has grown over the last few decades. In

Latvia, this trend is evident not only due to pandemic circumstances but also in official statistics. Between 2021 and 2024, the number of students choosing distance programs in secondary school has nearly doubled (Ministry of Education and Science, 2021–2024). Also, there are 28 college-level programs, 10 bachelor's programs, 11 professional bachelor's programs, 12 master's programs, 8 professional master's programs, and 7 doctoral programs offered in Latvia that students can complete through distance learning (NIID. LV, n.d.).

At the same time, concerns have been raised regarding educational quality and effectiveness of this type of education compared to traditional schooling. Data analysis by Latvian Television (LTV) indicates lower exam results in distance education schools, which highlights the necessity for improvement in this field (LTV News Service, 2024). To fully understand this phenomenon and its impact on the education system, it is important to explore the historical foundations of distance education in Latvia. This article analyzes the development of distance education between 1991 and 2004 in Latvia and compares it to the traditional educational model, highlighting its key features and challenges, along with a brief insight into the changes in the use of technology and advancement of distance education in Europe as a whole. The aim is to understand how historical, socio-political changes, as well as pedagogical and technological innovations, influenced the introduction and quality of distance education in Latvia, and to indicate the factors that facilitated or hindered its comprehensive development.

After the restoration of independence in 1991, Latvia underwent extensive political and social reforms, including in the field of education. The new Education Law of the Republic of Latvia of 1991 established the legal framework for obtaining general secondary and higher education. However, the limited availability of state-funded university seats meant that students had to pay for their own schooling. Although the interest was evident, a way that provided young people with the opportunity to work alongside studies had to be established. The growing demand for a skilled workforce in the newly established society also stimulated the need for flexible educational formats (Bleiere et al., 2005). In the European context, distance education was seen as a key element to meet the demand for education as well as provide flexibility, as it started becoming more legitimate in 1992. All the member states, with the exception of Luxemburg, adopted some variation of higher distance education. The enrollment in higher education institutions that were part of the European Association of Distance Teaching Universities in 1990 was around 360,000 students and had tripled by 2004 at more than 1,150,000 students making it a clear alternative to traditional education (MacKeogh, 2005).

Distance education was first officially mentioned in Latvia in 1994 in a conception by the Ministry of Education and Science, which called for creating a Distance Education Council to promote adult education and retention, to address unemployment issues. (Concepts. Education and Science, 1994). Government involvement in international programs, such as the PHARE “Multinational Cooperation in Distance Education” (PHARE “Starptvalstu sadarbība tālmācībā”) project, together with 10 other countries emerging from Soviet occupation, facilitated the foundational infrastructure for distance education

in Latvia (Ivanova et al., 1999). In a 1996 interview in *Latvijas Vēstnesis* Janis Gaigals (Jānis Gaigals), Minister of Education (1995–1996), emphasized the need for educational reform to help Latvia become competitive in comparison to other European countries and join the EU. He noted, “education is a personal choice of individual, but nevertheless these people together form society”. Although the EU had no specific educational guidelines for joining, an educated and cooperative society was a prerequisite for Latvia’s membership (Ozols, 1996). As part of this reform, in 1996, Cabinet Order No. 453 for the first time included distance learning in the classification of types of educational provision (Ministry of Education and Science, 1997). Journalist Inga Pāparde pointed out the growing popularity of distance education, highlighting institutions like the Latvian Academy of Entrepreneurship and Management and the Riga Commerce School as pioneers in distance learning programs (Pāparde, 1996, 1997). The Ministry of Education and Science, in collaboration with the Latvian Distance Learning Council developed a strategy to expand distance learning and created the Latvian Distance Learning Centre in order to support organizations and educators (Ivanova et al., 1999).

Literature Analysis

Distance education is broadly defined as a formal learning process in which teachers and students are separated in time and/or space, with instruction mediated through technological or other means. Communication in distance education can be synchronous or asynchronous, and its success relies on learner autonomy as well as institutional support (Fidalgo et al., 2020).

While distance education is often associated with higher education, it has become increasingly prevalent across multiple educational levels globally. In higher education, flexibility and accessibility are primary drivers. Universities have adopted online and blended formats to widen participation, generate revenue, and respond to globalization pressures (Morris et al., 2020). For example, in the United States in fall 2021, 9.4 million undergraduate students (61%) enrolled in at least one distance education course, and 4.4 million (28%) took courses exclusively online. This represents a 97% increase in online course enrollment between 2019 and 2020 (National Center for Education Statistics, 2024).

Contrary to the common assumption that distance education primarily operates at higher education level, evidence indicates its substantial implementation at the primary and secondary levels. Longitudinal data from Michigan, USA, show that over 159,000 K-12 students, representing 11% of public school enrollment, took virtual courses during the 2022–23 school year, spanning 68% of districts statewide. Elementary students demonstrate the highest virtual course pass rates, often exceeding 80%, whereas outcomes vary by grade level and implementation model. Full-time virtual schools served nearly 49,000 students through dedicated cyber or online school programs (Freidhoff et al., 2024).

Internationally, K-12 distance education has been implemented in diverse contexts. In Australia, the Country Areas Program provides online learning to 248 remote schools, while Canada's Provincial Learning Management System serves over 25,000 students. Singapore integrates e-learning into 75% of schools, including dedicated "e-learning weeks" during which students complete all lessons online from home (Powel & Patrick, 2006). By 2011, countries such as Australia and China had established fully online schools serving thousands of students annually. Australia's Schools of the Air, operational for over fifty years, exemplify longstanding K-12 online learning programs. In British Columbia, Canada, online schools offer complete programs or individual courses to 71,000 students, roughly 12% of the student population, while Singapore uses blended learning to complement traditional classroom instruction (Barbour et al., 2011). More recently, Canadian online learning programs enrolled nearly 400,000 students in the 2021–22 school year (Barbour & LaBonte, 2022).

Evidence also indicates that distance education is a viable alternative for students who are unable to attend school in person due to health or other constraints. Academic outcomes in online learning environments are comparable to in-person schooling, suggesting that digital modalities can maintain educational standards while offering flexibility (Black et al., 2022). Moreover, participation in online schools may contribute to improved health outcomes, highlighting additional benefits of distance learning beyond academic achievement (Thompson, Ferdig, & Black, 2012).

Overall, the literature demonstrates that distance education has evolved into a well-established and flexible modality across all educational levels, not only higher education. Evidence from multiple countries shows that both full-time and blended online programs can support academic achievement and provide equitable access to learning for students in diverse circumstances.

Methodology

This study employs a qualitative and exploratory approach, analyzing a diverse range of historical documents, legislation, ministerial concepts, newspaper articles, and prior research on the implementation and development of distance education in Latvia. The aim is to provide a broad and inclusive examination of how distance education evolved within the selected time period rather than to conduct a systematic review. Data were obtained from official state institution websites, archival sources, and publications by scholars, policymakers, and journalists (Ivanova et al., 1999; Papparde, 1996, 1997; Deķe et al., 2000).

Additionally, this study provides a comparative analysis of distance education and traditional classroom-based instruction during the historical period in question. This comparison seeks to highlight key similarities and differences in pedagogical approaches, accessibility, and policy development.

Results

Distance Education Learning Methodology and Use of Technology

The Distance Learning Handbook, published in 1999, defined the significant differences between face-to-face and distance learning studies in methodology and use of technology. Face-to-face studies were based on standard programs, with lectures and classes, rarely using technology. In turn, distance learning offered the principle of “free study”, using specially developed materials and modern technologies, promoting student independence and responsibility for their own learning process. Feedback in face-to-face studies took place twice a year, during sessions, but in distance learning it was regular, ensuring constant support for students. (Ivanova et al., 1999). The Distance Learning Consultant Handbook, published in 2000, provided practical recommendations for educators, emphasizing the need to clearly define learning objectives, relevance, and achievable results in learning materials in order to promote student interest and motivation. In distance learning, similar to the traditional learning environment, the learning process included self-control exercises and assignments to be submitted at the end of each topic. The concept of a “distance learning consultant” was also defined: unlike traditional teachers, the task of a distance learning consultant was not to teach, but to interest and guide students towards an independent learning process (Deķe et al., 2000). Programs like the Riga School of Commerce’s “Practical Entrepreneurship” delivered educational materials and assignments by mail, with students regularly submitting their completed work, in 1998 a total of 2 500 people participated in this course (Rumbēna, 1998). A similar model was used by the Dutch International Correspondence Course, where students, from Latvia, of various ages from 9 to 77 learned languages via written and audio materials. These materials were specially created to be structured and provide gradual acquisition of knowledge without a teacher present, indicating the wide availability and adaptability of distance learning (Hicemberga, 1997; Ivanova et al., 1999).

In the European Higher Education Memorandum distance education was described as having the “potential of the new technologies based on informatics and telecommunications” (Commission of the European Communities, 1991). However, while distance education theory suggested extensive use of modern technologies – computers, the internet, audio, and video materials – such resources were limited in Latvia during the 1990s because of high equipment costs and low internet availability. Therefore, course materials were frequently provided in print, and the development of interactive online options evolved slowly (Ivanova et al., 1999; Deķe et al., 2000).

In the early 1990s the use of technologies in European distance universities was minimal, with printed materials dominating, similarly to the situation in Latvia. However, this changed with the introduction of the internet into educational settings, in 1998, the first virtual learning platforms were created which provided both the opportunity to share materials in a more structured way, as well as gave students and tutors the ability to communicate more effectively (MacKeogh, 2005). Though not all European member states had the same issues with the lack of technology, for example in 1995 the University

of Iceland was able to gift some computers and training resources to the University of Latvia (Riekstiņa, 1995).

In 2000 the European Commission adopted the “eLearning: Designing tomorrow’s education” initiative, which intended to educate students about the use of technology and promote universal digital literacy. This initiative was planned to be established in the period between 2000 – 2004, and meant to encourage the member states to “rectify the shortage of skills associated with new technologies, and improve social inclusion” (Commission of the European Communities, 2001). In 1997, Moffett (1997) reported that from the point of view of the United States, the Baltics appeared to be in the lead, ahead of other formerly occupied countries, in terms of internet connectivity and use of technology. However, the development was not equal, as Estonia had made Internet connectivity a national priority and hoped to provide all secondary schools with an internet connection by 2000 (Moffett, 1997). However, in 2002, in Latvia the usage of internet in education was a regular occurrence, and Kuzmins (2002) in his article mentioned the shift to a more virtual education, even mentioning advanced tools like virtual and augmented reality which had the potential to benefit both learners in traditional classroom as well as a virtual one (Kuzmins, 2002).

Latvia’s distance learning evolved in the 1990s and early 2000s from print-based, student-centered programs to technology-enhanced education. Early initiatives emphasized independence, structured materials, and regular feedback, while limited access to computers and the internet slowed digital integration. Support from international partners, virtual learning platforms, and European initiatives gradually expanded technological use, enabling more interactive, accessible, and engaging learning. By the early 2000s, Latvia was increasingly adopting virtual education, laying the foundation for modern, technology-driven teaching and learning.

Accessibility and Flexibility

Distance education drew attention primarily for its ability to accommodate a wide range of learner needs allowing representatives of different social groups to obtain education regardless of place of residence, time resources or personal circumstances. In the European Higher Education Memorandum distance education was described as “having an extraordinary potential to contribute to education and training deriving from the freedom which it enjoys from constraints of time and place, giving it an extensive flexibility of application for use on its own or in conjunction with other learning systems” (Commission of the European Communities, 1991).

In the context of Latvia, Paparde (1996) also highlighted the opportunity to participate in seminars with representatives of other countries, promoting international cooperation which otherwise would not be possible (Paparde, 1996). Largely, however, distance education was advertised for people living in remote regions, outside of the larger cities, as well as those who for any reason had not completed primary or secondary education as it offered students who were already employed to acquire additional skills or retrain (Tabore, 1997; Deķe et al., 2000). As traditional education in Latvia was focused on

mentally and physically healthy people, distance education offered broader opportunities for young people who could not afford to study full time in a traditional setting, as well as for people with disabilities, those in prisons, or those needing professional development (Ivanova et al., 1999; Deže et al., 2000; Distance learning is a new and still little-known learning method in Latvia, 1998).

All in all, distance learning offered a good alternative to traditional education, also drawing attention to the problems of access to education outside large cities (Deže et al., 2000). In addition, in 2002, the newspaper *Latvia in America* popularized the opportunities for distance learning at foreign universities, emphasizing the availability of education at any time and place. (Studying on the Internet, 2002).

However, not all reviews of distance education at that time were positive and hopeful. For example Lase (2001) highlights some of the drawbacks such as missing out on the face-to-face contact with fellow students. She also emphasizes that by studying in distance education one might skip out on some crucial student activities, like participating in conferences and living in dormitories. Moreover, there is also no opportunity to join student clubs and associations. All in all, Lase (2001) concludes that while distance education offers ample learning opportunities, the Internet in the virtual world is no substitute for human contact.

In short, distance education in Latvia provided flexible opportunities for diverse learners, including those in remote areas, working adults, and people with disabilities, while also promoting international cooperation. It offered an alternative to traditional education by overcoming geographic and personal barriers.

Quality Assurance Challenges

In the European Higher Education Memorandum distance education was noted to have some critical drawbacks which included “lack of standardization and the cost of developing multimedia products; the rate of obsolescence; limited experience of use by teachers and learners; and the lack of user friendliness of packages and course delivery systems” (Commission of the European Communities, 1991, p. 24). Therefore, despite the popularity of distance education in both Europe and in Latvia, discussions arose about the quality.

A 1999 article in *Latvijas Vēstnesis* highlighted the rapid growth in demand for quality education in Latvia, with student numbers nearly doubling since 1993, but raised concerns about insufficient funding, ageing equipment, and staff, which could impact education quality (Ensuring the quality of higher education. External evaluation of the University of Latvia, 1999). Initially focused on face-to-face studies, these concerns later extended to distance learning.

In 1999, the European Union created a Higher Education Memorandum in which distance education was identified as a critical area for development, as this gave the opportunity to meet the demand of people who wanted to study while working. (MacKeogh, 2005) By 2000, *Latvia in America* analyzed challenges in distance learning, such as lower perceived knowledge quality, lack of student motivation, and difficulties in time

management. (Studying on the Internet, 2002) To address these issues, the Concept for the Development of Education 2002–2005 called for a quality assessment system of distance learning and emphasized making higher education accessible to students with disabilities and special needs, advancing diversity and inclusion. (Concept of Education Development for 2002–2005, 2002) As part of EU accession preparations, the Latvian Government collaborated with the European Commission to establish the Joint Social Inclusion Memorandum, which stressed the importance of accessible education for people with reduced mobility and mothers during childcare leave via distance learning, enabling them to use e-work opportunities later. (European Commission, & Government of the Republic of Latvia, 2003). Despite its potential to increase accessibility, distance learning faced significant challenges in quality assurance and gaining public trust.

Discussion

The historical analysis of the development of distance education as a concept in Latvia between 1991 and 2004 reveals a complex interplay of socio-political transformation, technological advancement, and educational innovation that mirrors broader European trends while reflecting unique national circumstances. The technological trajectory from correspondence-based to digitally-mediated learning exemplifies the adaptive capacity of educational systems during political transitions, with Latvia's initial reliance on printed materials and gradual integration of internet technologies paralleling the broader European shift described by MacKeogh (2005). The emphasis on democratizing education through flexible access for remote populations, working adults, and individuals with disabilities demonstrates early recognition of distance education's equity potential, aligning with contemporary research on widening participation (Morris et al., 2020). However, persistent quality concerns identified in early European and Latvian policy documents, including lack of standardization, teacher inexperience, and questions about knowledge quality, continue to manifest in current debates about online learning effectiveness, as evidenced by recent concerns about exam performance in Latvian distance schools (LTV News Service, 2024). The proactive approach to policy integration within EU accession frameworks suggests that international alignment can accelerate domestic educational innovation, yet the enduring challenges indicate that foundational issues in quality assurance and pedagogical design established during this formative period require ongoing attention to ensure that the expanded access achieved through distance education translates into meaningful educational outcomes.

Conclusion

The implementation and evolution of distance education in Latvia in the early 1990s and the first half of the 2000s mirrors national and social transformations and highlights the need for more flexible forms of education. On the one hand, the demand for continuous and lifelong learning created a favorable environment for experimenting with new

learning formats. On the other hand, limited financial and technical resources, as well as a shortage of trained instructors, hindered quick developments.

- **Pedagogical Approach:** In the 1990s, distance education in Latvia was characterized by a “free study” principle and individualized learning processes. Its major differences from traditional education included scheduling flexibility, in terms of time, place, and pace, and the greater use of technology.
- **Flexibility and Accessibility:** Distance learning models expanded educational opportunities for individuals restricted by geographic, financial, or personal circumstances, thereby contributing to a more inclusive and democratized educational landscape.
- **Limited Technological Resources:** The reliance on correspondence materials and infrequent access to modern digital tools slowed the transition to interactive online platforms, highlighting the importance of adequate funding and infrastructure.
- **Evolving Instructor Roles:** Moving from traditional teacher-centered models to those requiring “distance education consultants” and the development of structured self-study materials highlighted a shift toward facilitating independent learning and continuous feedback mechanisms.
- **Quality Assurance Concerns:** Widespread public uncertainty about the quality of distance learning, as reflected in policy documents and media coverage, highlighted ongoing challenges in establishing public confidence. The development of quality assessment frameworks outlined in national education policies represents systematic efforts to address legitimacy concerns.
- **Policy and International Support:** Government engagement in programs such as PHARE, along with EU initiatives, laid the groundwork for distance education reform; however, limited local resources and disparate regional development meant that implementation varied significantly.

These findings indicate that successful distance education development requires harmonizing national policies, funding, technological progress, and high-quality pedagogical approaches to strengthen public trust in the effectiveness and value of distance education.

Based on these historical insights, modern distance education in Latvia and beyond can benefit from several targeted approaches. Strengthening the technological infrastructure is essential for ensuring reliable internet access and bridging the digital divide, especially in remote or underserved areas. Equally important is enhancing teacher training, so educators have the skills and support to adopt interactive methodologies and remain responsive to the diverse needs of distance learners. Establishing transparent quality standards and rigorous accreditation processes will help solidify public trust in distance education programs. Moreover, inclusive and flexible course design, coupled with the use of adaptive learning technologies, will allow working professionals, students with disabilities, and others with special circumstances to achieve educational goals more efficiently.

Lastly, continued collaboration with international partners, can facilitate resource sharing, promote best practices, and maintain alignment with evolving educational trends. By addressing these key areas, contemporary distance education can build on historical lessons to offer equitable and high-quality learning experiences for all.

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SEXUALITY EDUCATION AND FAMILY FORMATION IN LATVIAN LEGISLATION: CURRENT AND HISTORICAL PERSPECTIVES

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ABSTRACT

The aim of the study was to identify the current perspectives on sexuality education and family formation values in Latvian educational legislation and to discuss its connection with the historical legacy of the interwar period (1918–1939). The research question is: how sexuality education and family formation values are covered in current Latvian normative documents in the field of education? The study is based on current mandatory and relevant regulatory documents which mention family formation values and sexuality education. The documents analysed were the Constitution of the Republic of Latvia, Education Law, the General Education Law, the Youth Law, the Guidelines for students' upbringing, the State Basic and General Secondary Education Standards, as well as the Sustainable Development Strategy of Latvia 'Latvia2030' and the National development plan of Latvia for 2021–2027. To answer the research question, the study involved desk-based content analysis and interpretation. A list of keywords that captured sexuality education and family formation values was created. A contextual analysis of these concepts was carried out to find out what the documents mean and imply, with an ethically neutral attitude. The study found that Latvia's legislation defines sexuality education and family-formation values, but the regulation of the implementation is inconsistent. These results were discussed in the cultural and historical context of Latvia, with an emphasis on the interwar period (1918–1939). The study will help improve pedagogical practice by establishing the conceptual foundations for integrating family formation values into sexuality education and will promote the development of the normative base by preparing proposals for a report on policy recommendations in this area.

Keywords: *education for family formation, historical perspectives, Latvian educational legislation, normative documents, sexuality education*

Introduction

The project “Promoting sexuality education for family formation in the Latvian education system” (2024–2026)¹, implemented at the University of Latvia, aims to explore the relationship between sexuality education and family formation values. The need for the study stems from several national and international challenges. The related challenges in contemporary Latvian society and culture are:

- 1) A deep demographic crisis: the total population of Latvia dropped from 2.4 million in 2000, to 1.9 million in 2024 (Central Statistical Bureau of Latvia, 2024, 26–34).
- 2) A persistent crisis of marriage: in 2020 Latvia had the highest overall divorce rate in the European Union (2.7 per 1000 inhabitants); in 2023 there were 504 divorces per 1000 marriages; and in January 2024 45.8% of families had one parent with one or more minor children (Central Statistical Bureau of Latvia, 2024, 55–67).
- 3) Over the past 10–15 years, debates and confusion about the definition of marriage and family have intensified both in Western societies (e.g., Murray, 2019; Girgis, Anderson & George, 2020) and in Latvia, where, in 2023, a signature collection intended to amend the constitutional definition of family (Central Election Commission, 2023). Earlier forums and conferences from 2010 to 2012 already addressed the need for unified family legislation (Association “Family Association”, 2010; Saeima, 2011, 2012). Uncertainty about family concepts remains particularly evident among young people (Grīnberga, 2022).
- 4) The actualization of the moral dimension of education in legislation, especially since 2015, when the amendments to the Education Law (Saeima, 1998) renewed the relevance of virtue education (Maslo et al., 2023). The recent education reform (Skola2030, 2019; Namsone, 2018) declares the need for integration of virtues and values in education, but the new content of education does not consistently cover this (Mūrnieks, 2024).
- 5) The gap between sexuality education and family formation in recent scientific research in Latvia (Grīnberga, 2023; Ķīvīte-Urtāne et al., 2023; Mileiko et al., 2016; Papardes zieds, 2022), and the need for value-based sexuality education materials for students.
- 6) The context of domestic violence (8243 family conflicts registered in 2023), but also at school (Sprinģe et al., 2023) and in Latvian society (State Police, 2024). A plan to prevent and combat violence against women and domestic violence for 2024–2029 was approved in 2024 (Cabinet of Ministers, 2024).

The choice of the research focus also took into account current challenges mentioned in international research on family-oriented sexuality education (Asgharinekah & Samimi, 2023), character-centred sexuality education (Beltramo, 2022), sexuality education for family life (Bhagwandin, 2022; Dița & Calbaza-Ormenișan, 2022), self-awareness

¹ <https://www.lu.lv/zinatne/projekti/atveselosanas-un-noturibas-mehanismu-projekti/atbalsts-petniekiem-projektiem/vertibas-balstibas-gimenes-pratibas-un-seksualas-izglitiba-veicinasana-latvijas-izglitiba-sistema/>

and free informed choice (Obelenienė, 2022), sexuality education and fertility (Raith-Paula, 2018) and comprehensive sexuality education (UNESCO et al., 2018).

One of the activities of the project, presented in this article, regards the coverage of sexuality education and family formation values in the normative documents of Latvia regarding education. The research question was: How sexuality education and family formation values are covered in current Latvian normative documents in the field of education? The study included a systematic analysis of the legislation of Latvia in order to find out to what extent they comply with the Constitution of Latvia and reflect the most up-to-date scientific knowledge on sexuality education for family formation, and a discussion of the results in the context of the pedagogical experience of the inter-war period in Latvia.

Methodology

Materials used in the study

The documents analysed were the Constitution of the Republic of Latvia (Saeima, 1922); the Education Law (Saeima, 1998), the General Education Law (Saeima, 1999), the Youth Law (Saeima, 2009); the Guidelines for students' upbringing (Cabinet of Ministers, 2016); the Basic Education Standard (Cabinet of Ministers, 2018), and the General Secondary Education Standard (Cabinet of Ministers, 2019); the Sustainable development strategy of Latvia 'Latvia2030' (Saeima, 2010) and National Development Plan of Latvia for 2021–2027 (Saeima, 2020).

Methods

The following categories were used for the content analysis of these documents: 1) hierarchical level of documents; 2) relevance and clarity of words and concepts used regarding family formation and sexuality education; 3) number of references to family and marriage values; and 4) educational implications and specific outcomes for students (in educational standards).

At the beginning of the analysis, a list of key words and concepts reflecting sexuality education and education for family formation was created. The key words were selected based on (1) the values referring to family formation declared in the Constitution of the Republic of Latvia (Saeima, 1922), in particular in the Preamble and in the Section 110; and (2) relevant keywords used in international scientific literature on sexuality education for family formation (see above). Three groups of concepts were identified as interrelated and complementary:

- (1) Family formation (family, marriage, parents, children, mother, father, generations)
- (2) Sexuality education (gender, female, male, sexuality, fertility, life);
- (3) Family values (love, happiness, trust).

How often and in what contexts these words are used in documents was investigated, clarifying exactly what they mean, declare, define, presuppose and assert.

Results

This section presents firstly the overall frequency of relevant terms referring to family formation and sexuality education in Latvian normative documents referring to education, and then their meaning and implications are explained by groups of documents: first in the highest normative documents, then in the educational standards at different levels, and finally in the strategic documents focused on future perspectives.

Overall frequency of relevant terms used in Latvian legislation regarding education

The number of references to family and marriage values was analysed in the main normative documents related to education (see Table 1).

Table 1 Frequency of terms related to sexuality education and family formation in Latvian legislation

Documents Concepts	Constitution	Education Law	General Education Law	Youth Law	Guidelines for students' upbringing	Basic Education Standard	General Secondary Education Standard	Sustainable development strategy Latvia2030	National development plan of Latvia 2021-27
Family formation									
Family	3	10	1	-	8	4/21	5	13	112
Marriage	1	1	-	-	3	3	2	(2)	1/3
Parents	2	33	4	-	5	(21)	3	23	24
Children	-	10/62	13	-	2	6	-	95	52
Mother	-	-	-	-	1	-	-	-	2
Father	-	-	-	-	1	-	-	-	1
Generations	1	-	-	-	1	(1)	1/11	7	11
Sexuality education									
Gender	-	1	-	-	2	3/7	1/4	(3)	(3)
Woman	1	2	-	-	-	-	-	3	(7)
Man	1	2	-	-	-	-	-	-	(6)
Sexuality	-	-	-	-	p	-	1	-	1
Fertility	-	-	-	-	-	-	(1)	(3)	-
Life	1	11	-	-	2	5/18	2/15	1	1
Family values									
Love	-	-	-	-	-	-	-	-	-
Happiness	-	-	-	-	-	6	2	-	2/5
Trust	(2)	-	-	-	1	2	(2)	(8)	(15)

Note: 1) a number in brackets indicates that the concept has been used in other senses than those related to family formation values; 2) In fractional notation, the first number represents relevant uses related to family formation or sexuality education; the second number indicates total mentions in the document.

Key concepts related to family formation and sexuality education in the highest normative documents

Constitution of the Republic of Latvia (Saeima, 1922)

The Preamble to the Constitution which is “a philosophy of the values and history of Latvian life” (Kūle, 2016, p. 396) emphasizes the central role of the family, stating that “the family is the foundation of a cohesive society. Everyone shall take care of himself, his relatives and the common good of society, acting responsibly towards others, future generations, the environment and nature”. This statement outlines a set of values divided into three interconnected categories: family, relatives, and future generations. These can be viewed as three concentric arcs representing the individual’s perspective and broader societal responsibilities. The first arc highlights the family as the foundation of society. The second focuses on caring for one’s close circle – relatives and influential figures in personal development. The third arc introduces a future-oriented view: responsibility toward future generations, which conceptually includes also procreating and raising children to ensure a sustainability.

The Section 110 of the Constitution clarifies the understanding of family and marriage: “The State shall protect and support marriage – a union between a man and a woman, the family, the rights of parents and rights of the child. The State shall provide special support to disabled children, children left without parental care or who have suffered from violence.” Given the intentions of the Members of the Parliament at the time when this article of the Constitution was voted on, it can be argued that in Latvia marriage is understood to mean only the union between a woman and a man. Such a union also results in the formation of a family. The emphasis on the rights and protection of children (in the second sentence of the Section) implies that the next generation – children – are an essential asset. It can be concluded that procreation, upbringing, rights and protection of children should be a focus of both individual and public policies, including education policies. How these values are offered to the younger generation is determined by the Education Law.

Education Law (Saeima, 1998)

Section 2 of the Education Law defines the purpose of education. “According to the age and needs of an educatee, he or she shall be ensured an opportunity to [...] have moral, aesthetic, intellectual, and physical development, by promoting the development of a knowledgeable, skilful, and socialised individual”. Section 10.1 of the law states that “the education system shall ensure the moral, aesthetic, intellectual, and physical development of an educatee in accordance with the values enshrined in and protected by the Constitution of the Republic of Latvia, in particular such values as life, human dignity, freedom, family, marriage, work, nature, culture, the Latvian language, and the State of Latvia.” As it can be seen, the values mentioned in the Constitution have been included in the Education Law. Life is mentioned first, pointing implicitly to the openness to procreation as a precondition for the existence of the State and for education. Similarly, the Constitution mentions family and marriage as relevant values. It can be concluded that the Education Law develops a set of values in line with what is declared in the Constitution.

Guidelines for students' upbringing (Cabinet of Ministers, 2016)

A key document that directly regulates the education process in Latvia – ranking hierarchically below the Constitution and laws – is the Cabinet of Ministers (2016) Regulation No. 480, referred to as the Guidelines for students' upbringing. This document explicitly states that the educational process should promote learners' understanding, attitudes, and actions that reflect core values, including life, human dignity, freedom, family, marriage, work, nature, culture, the Latvian language, and the Latvian State. Notably, marriage and family are presented as fundamental values. The Guidelines stress that education should not only foster awareness but also shape attitudes and lead to action. In terms of sexuality education, this means providing accurate information about sexuality and relationships, fostering a positive and responsible outlook toward family life, and preparing students for building and sustaining families in the future.

Paragraph 6 of the Guidelines details educational objectives related to attitudes. It emphasizes promoting self-discipline, respect for life, cultivating healthy habits, and most significantly, an orientation toward family and marriage (6.6). This includes recognizing the unity of generations and the role of family in preserving national values. Family and marriage are clearly identified as desirable life goals for young people. Furthermore, Paragraph 10.4 elaborates on the responsibility of educational institutions to educate students about the value of family and marriage, the role of parents, and family dynamics. They are also encouraged to organize activities that reinforce these themes, such as celebrating Family Days, Mother's Day, and Father's Day. Lastly, Paragraph 17.4 outlines criteria for content evaluation, ensuring that educational materials do not promote cruelty, violence, pornography, degradation, promiscuity, or harmful habits, particularly concerning sexuality and family life.

Key concepts related to family formation and sexuality education in education standards

Two education standards (Basic and General Secondary) were analysed, including the sections that define the learning outcomes for pupils at the end of each education stage (Years 3, 6 and 9).

Family and marriage in education standards

Family. In the Basic Education Standard (Cabinet of Ministers, 2018), family is mentioned 21 times in total, but only 4 times directly as a value. In the General Secondary Education Standard (Cabinet of Ministers, 2019), the family is mentioned 5 times in total, and the word 'family' appears only 3 more times in the desirable outcomes, and 2 times in the context of the transmission of cultural heritage. Moreover, the General Secondary Education Standard states that pupils only "evaluate the role of marriage and family in the development of human personality" (outcome S.V.1.2.), but do not prepare for such relationships, nor do they evaluate their advantages (as is clearly stated in the Basic Education Standard).

Marriage. Marriage is mentioned 3 times in the Basic Education Standard (Cabinet of Ministers, 2018) in terms of values. The standard's outcome section mentions 'marriage'

twice, and once quite clearly and specifically articulates the relationship and value of family and marriage: The pupil “justifies views on the importance of family and marriage for the sustainability of society, evaluates the advantages of marriage compared to non-registered relationships” (outcome S.9.2.4.). In contrast, the General Secondary Education Standard (Cabinet of Ministers, 2019), when the perspective of marriage is closer to students, mentions marriage twice, but only once in the outcomes to be achieved.

Other concepts related to sexuality education and family formation in education standards

The Basic Education Standard (Cabinet of Ministers, 2018) makes multiple references to parental involvement (21 times), yet fails to acknowledge the role of parents in the context of family. While children are mentioned six times, there are no statements that frame children as a central value in family life or in the context of marriage and family formation. The concept of ‘life’ appears 18 times, but only five as a value. There is no reference to human life as something to be promoted or valued, nor to childbirth. Terms derived from the root ‘sex’ appear seven times: two addressing sexual diversity, one mentioning sexual life, and four in the context of sexual reproduction in Biology. The term ‘contraception’ is used once (outcome D.9.7.3.2.) in the context of critically considering postponing sexual intercourse and using contraception. However, key values and relationship skills necessary for family life receive minimal attention. ‘Trust’ and close concepts are only mentioned twice, but not in relational contexts. ‘Love’ is entirely absent, and ‘friendship’ appears only in indirect references (‘friendship games’, ‘environmentally friendly’).

The General Secondary Education Standard (Cabinet of Ministers, 2019) makes 15 references to the word ‘life,’ yet only twice refer to life as a value. ‘Fertility’ appears once but with no connection to human fertility. In learning outcomes, openness to procreating and raising children is entirely absent. The word ‘parent’ is mentioned three times, but not in the context of family life. The only reference to care for future generations appears in a social science topic title (outcome no. 3), emphasizing sustainability and preservation of inherited values. Health education includes a general statement on the importance of preventive measures, including sexual and reproductive health, but details remain vague. Respect for diversity, including gender diversity, is mentioned once (no. 14.8). The word ‘sex’ is mentioned 3 times in the subject matter Biology.

Key concepts related to family formation and sexuality education in strategic documents for the future

Sustainable Development Strategy of Latvia ‘Latvia2030’ (Saeima, 2010)

The document mentions the family 13 times, including 5 in the context of values. Marriage is mentioned only 2 times, in the context of the divorce problem, but not as a value or as a primary institution safeguarding family life. It can be concluded that the authors of the Strategy do not consider marriage as an important factor for the formation and existence of a family. The word life is mentioned only in the context of ecosystems, and

procreation of new life is not mentioned. The word fertility is never used in the sense of childbearing. The term 'sex' is used only in the context of gender discrimination. Women are mentioned 3 times in total; men are not mentioned once.

National Development Plan of Latvia for 2021–2027 (Saeima, 2020)

In this document, words derived from family appear 112 times, including in headings such as “Strong families, healthy and active people” (1st priority). The Plan promises support for forming large families and sets out the intention to strengthen the family as a core societal value. This includes increasing social protection for parents, promoting a family-friendly environment, celebrating large families, enhancing the role of fathers, and improving education related to parenting, relationships, and intergenerational solidarity. However, the plan only aims to ‘raise public awareness’ of these skills rather than integrating them into the formal education system. There is no indication that these values will be embedded in educational standards. Sexual health is mentioned once in a statement about psychological and emotional health and reducing disease risk. However, sexuality as a broader human experience is not addressed. Sexuality education is not explicitly mentioned, and women’s dignity is notably absent as a value. The first goal under the 1st priority is: “Healthy and active people in Latvia together build an inclusive society, with more children, happy families, responsible parents who are secure about their future”. Despite this promising language, the Plan does not specify within which documents or educational levels these goals will be implemented.

Discussion

The study found that, although the values of sexuality education and family formation are included in the Constitution, the Education Law, and the Guidelines for students’ upbringing, they are not consistently reflected across all relevant legislation and education standards. Key national planning documents only partially address family formation skills and preparation for marriage. Significant values regarding sexuality education and family formation, such as love (not addressed in any of the documents analysed), complementarity of man and woman, procreation, and openness to life, are missing. The question about how these findings relate to Latvian historical legacy between the World Wars is discussed in this section. How were the topics of sexuality education and family formation addressed in Latvia during that period in educational discourse? This historical perspective would help to formulate culturally sensitive recommendations to improve Latvia’s legislation and educational practice.

As Znotiņa (2014) points out, “in general, in the 1920s and 1930s, there was a reserved attitude towards the sexual education of children. Public attitudes, judging by opinions in the press, could be divided into two mutually opposed groups: deniers and supporters of sexuality education” (p. 200). Among other authors, Jūlijs Students, Eleonora Upatniece and Milda Liepiņa stand out in the field of sexuality education and family formation.

J. Students (1898–1964), a Latvian pedagogue, psychologist, and philosopher, presented a comprehensive moral framework for understanding love and sexuality in his book *Ethics* (1930). His concept of the ‘ethics of love’ distinguishes love of one’s neighbour and love between the sexes. Students emphasizes that opposite-sex love is universal and deeply rooted in the human experience (p. 51). However, this love must be grounded in conscience and ethics to be considered true. Sexual passion, although a natural and important element, cannot form the foundation of a lasting relationship. Love must be guided by moral judgment, a sense of duty, and responsibility to ensure its permanence and depth (p. 52). According to Students, the essence of true love lies in its moral characteristics: virtue, unicity, illumination, indivisibility, and mystery. These qualities make love not just a personal experience but a spiritual force capable of building and sustaining the family. For example, he asserts that “true and real love can only be for one person and once in a lifetime” (Students, 1930, pp. 53–54). The idea of ‘unicity’ (in Latvian – ‘vienlaulība’) plays a central role in his concept of the ideal family, which is built on a unique, lifelong love between two people of the opposite sex. Sexual activity before marriage, in his view, often damages the emotional connection between partners and leads to physical and emotional depletion. “True love is in many cases destroyed by sexual intercourse before marriage,” he warns (p. 58). He further argues that those who expend their passions too early become unfit for the responsibilities of family life, as “premarital sexual relations can cause emotional exhaustion and indifference (p. 57).

E. Upatniece (1893–1980), a prominent child and youth psychologist in inter-war Latvia, also made significant contributions to the field of sexuality education and family formation. She strongly emphasized that sexuality education should be rooted in family values, guided by love and example (Upatniece, 1938). She believed that children should be allowed to engage in role-play, such as pretending to be parents, to naturally explore family roles (Upatniece, 1931, p. 2). Upatniece advocated for open, honest communication with children. She asked, “Why should sexual matters be an exception?” when everything else in a child’s world is explained (Upatniece 1931, p. 3). Talking to children about how babies are made, in her view, prepares them for future family life, as these truths are integrated into their play and early understanding of relationships. She also stressed the importance of puberty as a critical period. Mistakes in sexuality education during this time, she argued, often lead to unhappy marriages later in life, where husbands feel misunderstood and wives lack emotional readiness for motherhood (Upatniece, 1938).

Another important contributor to the discourse on sexuality education and family formation during Latvia’s interwar period was Milda Liepiņa (1889–1972), an assistant at the University of Latvia. Her essay “The eroticism and sexual development of youth” (1929a, 1929b), present a holistic and value-based perspective on sexuality. Liepiņa linked sexuality education to spiritual purity, love, and the transmission of life within the family: “Love has been stamped by nature itself with the seal of immortality – for the fruit of love is life” (1929a, p. 319). Liepiņa emphasized the physical and spiritual complementarity between men and women (p. 325). In her view, eroticism has a deeper, preparatory role – it is meant to “prepare for married life and fulfilling life’s responsibilities” (Liepiņa, 1929b, p. 359).

She also advocated for postponing sexual relations until marriage: “A life of premature sex is undoubtedly harmful, because it consumes important forces necessary for the growth of the organism and the development of spiritual powers” (p. 363). For Liepiņa, true sexual love involves the entire person – both spirit and body – and flourishes only within committed relationships (1929b, p. 360–361). She also warned that “purely sensual desire degrades human beings, because it turns the other person into an instrument of one’s own carnal pleasure” (1929b, p. 361). Liepiņa also noted that the desire for love and family appears early in life, even before puberty, though initially in immature forms. She saw it as crucial to guide youth wisely: “It is not the inner stirrings of the youth, but the behaviour of small-minded adults and the obscene scenes of life that seduce the youth” (1929b, p. 362). Liepiņa also believed that young people are capable of mastering their impulses: “The human being has been given the power to rule over one’s impulses; in this power humans differ from other living creatures” (1929b, p. 363).

During Latvia’s inter-war period, the pedagogical discourse emphasized sexuality education as closely linked to marriage and family formation. The importance, for the formation of future stable marital and family life, of implementing a sexuality education based on the complementarity between man and woman, mutual all-embracing love, a sexual life based on ethical values, and self-control for the sake of the future family, was clearly supported. This historical legacy is largely absent from Latvia’s current education legislation regarding sexuality education and family formation. As a result, sexuality education is rarely addressed in a context that supports family formation.

Conclusions

The study found that although the values of sexuality education and family formation are included in the Constitution, the Education Law, and the Guidelines for students’ upbringing, and at least formally supported in future-oriented documents, they are not consistently reflected and practically supported across all relevant legislation and education standards. Notably, love as a value or subject for discussion is not addressed in any of the documents analysed. This situation is not consistent with Latvian cultural heritage, as formulated in the inter-war period, which conceived sexuality education as closely linked to marriage and family formation, stressing the importance of the complementarity between man and woman, mutual love, ethical values and virtues, and openness to life for promoting the formation of stable families.

Contemporary sexuality education in Latvia tends to emphasize health and biological aspects, but it fails to prepare students for building lasting relationships or families. International research (e.g., Ketting & Winkelmann, 2013; Lameiras-Fernández et al., 2021) supports this concern, highlighting the need to evaluate sexuality education programmes not only for health outcomes but also for how well they prepare young people for future family life. A broader, more holistic approach to sexuality education is essential for addressing these gaps. In addition to these gaps, in current Latvian legislation in Latvia the term ‘gender’ and related concepts like gender roles and gender identity are

absent, and the broader concept of ‘lineage’ (In Latvian – ‘dzimta’) that includes extended relatives and households, is not present either.

The authors propose improvements to face these legislative gaps, advocating for a comprehensive strategy on family formation rooted in the values established in Latvian legislation: family, relatives, and future generations. This strategy should be structured around three concentric perspectives: individual, societal, and future. Individually, family formation involves caring for oneself and close relatives. Socially, education should emphasize the family as the foundation of society. From a future perspective, families bear responsibility for nurturing the next generation. Thus, education must go beyond the biological and psychological to include anthropological and socio-cultural dimensions. It should preserve and transmit family culture across generations and consider public health, demographics, and economic implications.

The study recommends that education legislation be revised to include:

- Comprehensive sexuality education (covering sexual life, hygiene, sex drive, gender roles, and equality).
- Respect for gender differences and the opposite sex.
- The value of marriage as a stable, enduring union.
- Stability in relationships built on trust.
- Core values such as love, forgiveness, patience, and friendship.
- The importance of childbearing, nation-building, and generational responsibility.

It also suggests reconsidering the concept of ‘vienlaulība’ to describe stable partnerships and examining the use of ‘gender’ as distinct from ‘sex,’ a term present in societal debates but absent from legal texts. It is recommended that improvements to legislation and regulatory framework be based on the framework of ‘ethics of love’ (Students, 1930) and contemporary similar approaches (e.g., Girgis et al., 2020), urging caution in adopting foreign models without thorough evaluation. Future research is intended to develop conceptual proposals to promote value-based sexuality education for family formation in Latvia, and these proposals will inform a policy report aimed at advancing both pedagogical practices and educational legislation in Latvia.

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PROJECT METHOD APPLICATION IN EARLY CHILDHOOD TEACHER TRAINING

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ABSTRACT

This research examines the project-based learning method in early childhood teacher education, addressing its alignment with modern pedagogical approaches. The study investigates how this practice-oriented method enhances future teachers' professional competencies through active learning experiences and active involvement in real-life problem-solving. Using a mixed methodology combining literature analysis and empirical surveys, the research evaluates current application practices and identifies improvement opportunities that may strengthen future implementation. Results demonstrate the method's effectiveness in developing creativity, problem-solving skills, and reflective practice while bridging theoretical knowledge with practical challenges encountered in professional life. Findings reveal significant benefits including improved student engagement, teamwork abilities, communication skills, and professional autonomy. However, implementation challenges emerge regarding assessment clarity, organizational structure, and workload management. The study highlights the need for clearer guidelines, interdisciplinary integration, and optimized evaluation criteria. These improvements would maximize the method's potential in developing comprehensive pedagogical competencies. Furthermore, the findings underline the importance of aligning project-based learning with broader institutional strategies to ensure its sustainability and long-term impact. The research confirms the project method's value in addressing contemporary educational demands, particularly in cultivating adaptable, reflective practitioners who are capable of navigating diverse professional contexts. Practical recommendations emphasize the importance of lecturer training, supportive institutional frameworks, and continuous evaluation for successful implementation and long-term effectiveness.

Keywords: *Deep learning, Early childhood education, Experiential learning, Pedagogical competencies, Project-based learning, Project method, Teacher training*

Introduction

The evolving nature of contemporary society, rapid technological advancements, and shifts in educational paradigms necessitate continuous exploration of new teaching methods or the refinement of existing ones in teacher education. Learning is perceived as

a constructive activity, in which students' ability to analyze, reflect, and apply acquired knowledge in practice is crucial (Jucevičienė, 2006; Targamadžė, 2015). The constructivist paradigm emphasizes that learning is not only about acquiring knowledge but also about its practical application and the construction of individual understanding (Targamadžė & Šimelionienė, 2015; Bubnys, 2012; Jucevičienė, 2006). Thus, contemporary education prioritizes learning processes that emphasize active participation and experiential education (Pocevičienė, Lukavičienė, Augienė, 2010).

Considering modern trends in teacher education, increasing emphasis is placed on the notion that knowledge is best acquired through experience – the primary source of learning. Experiential learning not only aids in information retention but also promotes reflection and practical application (Saulėnienė & Bagdonas, 2021). Innovative study process organization, based on practice-oriented projects, allows future teachers to develop creativity, critical thinking, teamwork skills, and the ability to integrate technology into professional activities. Moreover, this project-based approach aligns with contemporary societal challenges by equipping future teachers with collaboration and communication skills.

Competencies acquired during the study process not only help teachers adapt to a constantly changing environment but also enhance their ability to collaborate effectively with families and address children's educational needs (Monkevičienė et al., 2018). General competencies extend beyond professional skills, significantly influencing personal and societal aspects of life (Costea, Crump, Holm, 2007; Jakubė & Juozaitis, 2012).

Although pedagogical interaction and learning-oriented methods are significant, research shows that they are not widely implemented and their potential remains partially untapped (Jucevičienė, 2006; Žydžiūnaitė et al., 2006). Teaching and learning methods are often applied in a fragmented manner, without integrating instruction, learning, and assessment processes. While students are receptive to innovative learning approaches, educators do not always fully exploit their potential.

One of the most effective ways to develop students' competencies is the practice-oriented project method. This method not only facilitates the implementation of theoretical knowledge but also enables students to plan and organize their learning process, ensuring that projects are not only conceptualized but also executed in real-world settings (Adomaitienė & Zubrickeinė, 2016; Pocevičienė, Lukavičienė, Augienė, 2010). Participation in project-based activities allows students to deepen their knowledge while enhancing practical skills and professional competencies. The significance of this method in the study process continues to grow, particularly in light of the integration of artificial intelligence into education.

To optimize the application of the practice-oriented project method in the study process, an empirical study was conducted. The results contribute to the improvement of teacher training and the enhancement of learning effectiveness.

Research Aim: To explore how the practice-oriented project method is applied in the preparation of early childhood education teachers to strengthen their pedagogical competencies, collaboration skills, and creativity.

Research Objectives

1. To discuss the significance of the project method and its application in the study process.

2. To assess students' and educators' perceptions of the project method and determine its impact on future teachers' preparedness for professional practice.

Research Object: The application of the project method in the study process of future early childhood education teachers.

Research Methods: Document and scientific literature analysis, written survey, quantitative data analysis.

The article consists of two parts. The first part examines the significance and application of the project method as a teaching and learning approach. The second part presents survey results that reveal students' and educators' perspectives on the project method and its impact on future teachers' readiness for professional practice. Additionally, insights for improving this method are provided.

The findings of this study contribute to the enhancement of early childhood and preschool education programs, strengthening the readiness of future educators to work in constantly evolving environments.

The Project Method, Its Significance, and Application Possibilities in the Study Process

Modern studies should provide more opportunities for learners to actively engage in the learning process, recognize the natural connections between learning and everyday life, and understand the influence of change processes on professional development (Pocevičienė, Lukavičienė, Augienė, 2010). In the educational process, priority is given to deep learning, which is oriented not only towards objective learning goals but also towards the authenticity and personal significance of the acquired knowledge (Jakubė, Juozaitis, 2012). According to Jakubė and Juozaitis (2012), deep learning is a process that fosters the active role of learners, making knowledge, skills, and attitudes an integral part of their identity. By analyzing information, solving problems, engaging in activities, and reflecting on their experiences, learners focus not just on facts but on key ideas and interconnections between them. They discuss insights and construct their own reality. It is emphasized that the project method is particularly suitable for this approach, as it encourages independent learning, initiative, active participation in all stages of learning, acquisition of knowledge, and development of necessary skills through exploration and independent discovery of scientific and life truths (Pocevičienė, Lukavičienė, Augienė, 2010; Jakubė, Juozaitis, 2012; Žibėnienė, Indrašienė, 2017).

The term "project" originates from Latin, meaning "to throw forward," implying movement. The scientific literature offers numerous and diverse interpretations of the project method. Tamošiūnas (1999) identifies ten key characteristics:

- The project method emerged as a response to social and pedagogical issues in contemporary society.
- It becomes necessary when routine solutions are no longer sufficient.
- It is an open-ended method, focusing on the unknown, research, discovery, and learning.
- Its goal is to develop skills and strategies for addressing social and pedagogical issues.

- It is based on collective decision-making and collaboration.
- Participants must be active throughout the process.
- The method requires educators to take on an advisory role, supporting student initiatives.
- It is one of many learning methods.
- The quality of a project is assessed based on predefined criteria and outcomes.

A review of the scientific literature highlights five key developmental stages and educational objectives addressed by the project method.

Table 1 Developmental Stages of the Project Method and Educational Goals (prepared by the article authors based on Adomaitienė & Zubrickienė, 2016; Pocevičienė et al., 2010; Žibėnienė & Indrašienė, 2017)

Stages	Key Concepts/Educational Goals
<p>Stage I Initial Development In the late 16th century in Italy, the project method was employed at the art academies of Rome and Paris for instructing architects and artists. The term “project” as a teaching methodology was first formally used in 1702 at the Accademia di San Luca (Rome Higher School of Fine Arts).</p>	<p>Educational goal – knowledge transfer. Three characteristics of projects as a teaching method: Learner orientation – autonomous knowledge acquisition during project work. Object orientation – application of interdisciplinary knowledge domains. Practice orientation – tasks performed under real-world simulated conditions.</p>
<p>Stage II of Project Method Development The project method, having been widely adopted in Europe, migrated to the United States. By the late 18th century, it began being implemented in technical colleges for the practical training of future engineers.</p>	<p>The project method is applied not only in designing projects but also in their practical implementation. Learning should be grounded in the learner’s interests and experiences, with creative work serving as the foundation of project initiation.</p>
<p>Stage III of Project Method Development This phase is attributed to the late 19th and early 20th centuries, characterized by significant expansion of project-based methodology in education.</p>	<p>Experience gained through practical activities becomes an acquired value in the educational process. The educated individual must solve problems posed by the real environment. A project constitutes a complex activity where students themselves plan, set goals, and seek solutions. The outcome of the project method is comprehensive education.</p>
<p>Stage IV of Project Method Development The project method achieved global dissemination, with projects reintroduced into European schools by 1920. In both the United States and Europe, the project approach served as the foundation for numerous educational movements, including the Dalton Plan and Jena Plan.</p>	<p>1920–1930 European schools were characterized by learner individualization, while simultaneously promoting their activity, autonomy, group work, and integrated learning of subject matter.</p>
<p>Stage V of the Project Method Development The final stage of the development of the project method began in 1965 in Germany and continues to this day. This period is associated with a rethinking of project ideas and their further dissemination in the field of education.</p>	<p>Goal – Interdisciplinary Integration and Socialization. Children learn by observing, exploring, analyzing, and summarizing, and their cognitive activity has the greatest impact on personality development. Education is based on the continuous development of inner potential through new experiences.</p>

Teresevičienė and Adomaitienė (2000) define the project method as possessing unique features that distinguish it from group learning or traditional teaching methods. These features include openness to new ideas and concepts, learner initiative, independent selection and evaluation of information, engagement with real-life problems, integration of theoretical and practical learning, responsibility for decisions and actions, and the instructor's role as an advisor or partner. The final product may take the form of a presentation, thesis, or exhibition.

According to Jakubė and Juozaitis (2012), learning projects are self-directed learning initiatives that include a defined learning task and a set timeframe. Typically, learning projects last a semester, but they can be shorter, even as brief as one week. These projects must have two essential features: a clear task and a specific duration. The authors emphasize the method's universality and adaptability to different learning contexts, whether individual or small-group learning. Properly organized, this method supports lifelong learning skills and fosters a positive attitude toward continuous education. It encourages students to reflect on their learning experiences and acquired knowledge.

Currently, the project method is experiencing a resurgence and is recognized as a valuable supplement to traditional learning methods, applicable across various educational levels and age groups. In the study process, a project can be viewed both as a means of achieving concrete results and as a method for attaining broader study objectives (Pocevičienė, Lukavičienė, Augienė, 2010). Scholars note that the project method integrates learning theory with practice and the learner's real-life experiences, unrestricted by rigid rules and norms (Adomaitienė, Zubrickienė, 2016).

The project method is widely applicable in the study process, across different subjects, study levels, and both compulsory and elective courses. Thus, it is necessary to highlight the specific features of its application.

The project method enables students to acquire practical skills, develop creativity and independence, enhance problem-solving abilities, and improve collaboration skills. It also promotes active participation in the study process and fosters a positive attitude toward continuous change. Three key prerequisites for the successful application of the project method in the study process are: understanding learners, possessing strong didactic and managerial competencies as an educator, and creating a conducive learning environment (Pocevičienė, Lukavičienė, Augienė, 2010). Each of these aspects is discussed in detail below.

When applying the project method, it is essential to understand students' experiences and capabilities in project-based learning. Before starting a project, educators should assess students' skills and interests. According to Pocevičienė, Lukavičienė, and Augienė (2010), a project should begin only when students are familiar with the concept of projects and group work dynamics. During the first project, more time should be allocated to each activity than usual. Teresevičienė and Adomaitienė (2000) note that project-based work is characterized by student initiative, engagement, enthusiasm, commitment, and satisfaction with their contributions and results. Therefore, students should be given the freedom to choose topics of interest, experience satisfaction from meaningful work,

Table 2 Characteristics of the Application of the Project-Based Method (compiled by the article authors based on Pocevičienė, Lukavičienė, Augienė 2010)

Application of the Project Method	Content of the Application of the Project Method
At the beginning of a course	As an introduction to the study of a specific field
As a continuous method	A method used throughout the entire course of study
According to the nature of the task	Oriented only towards activity planning; oriented towards practical activity
According to the orientation of the task	Oriented towards problem-solving; oriented towards exploring areas and ways of applying a new method, approach, or tool
According to the forms of task organization;	Individual; carried out in pairs; carried out in groups
To purposefully use learning methods for learner engagement;	Brainstorming; Analysis of information and facts; Arguments “for” and “against”; Group discussions; Mind mapping; Six thinking hats method; Searching for examples; Visualization of the “big picture”
Methods to be used when planning activities	Structural decomposition method; Schematization; Discussion.

conduct research, generate ideas, independently study new literature, gather information, make decisions, and solve problems. Project-based activities foster qualitative personal growth, creativity, self-confidence, self-esteem, and communication skills.

Smooth project implementation depends on the educator’s didactic and managerial competencies. Pocevičienė, Lukavičienė, and Augienė (2010) emphasize that educators must carefully plan projects, effectively communicate project details, consider involving experts, teach students how to find information from various sources beyond the internet, guide them in using technology appropriately, and be prepared to make necessary adjustments during the project. Jakubė and Juozaitis (2012) highlight that instructors should clarify learning objectives, discuss deadlines and assessment criteria, plan interim evaluations, provide learning support, and address students’ concerns regarding resources and schedules.

The development and implementation of practice-oriented projects pose additional challenges for both educators and students. The educator’s role shifts to that of a facilitator, mentor, or guide, while students take on more responsibility for gathering information, conducting observations, and conducting surveys. Each team member fulfills specific commitments, presents findings, and documents reflections on each activity. Project-based learning often takes place outside the traditional learning environment, utilizing external contexts. Therefore, continuous coordination, adherence to a well-structured schedule, and balanced student autonomy are crucial (Pocevičienė, Lukavičienė, Augienė, 2010).

In conclusion, the project method is an effective approach to fostering deep learning, where students actively engage in analyzing information, solving problems, and reflecting on their experiences. Applicable across various study stages and disciplines, it integrates

theoretical knowledge with practical skills, encouraging creativity, independence, and lifelong learning. The successful implementation of the project method depends on educators' didactic and managerial competencies, careful planning, and a supportive learning environment. By addressing contemporary educational challenges, the project method contributes to the holistic development of students and their ability to navigate real-world problems.

Research Methodology and Organization

To assess the perspectives of students and educators on the application of the project method and to determine how this method influences the preparedness of future educators for practical work, an empirical study was conducted from December 1, 2024, to January 10, 2025. The authors of the study, drawing on theoretical assertions presented in the literature review, adhered to the premise that one of the effective ways to develop students' competencies in early childhood education training is through the project method. This approach allows students to apply theoretical knowledge in practice, plan and organize the learning process, and engage in the full cycle of project implementation. Participation in project-based activities enables students to deepen their knowledge, refine practical skills, and enhance professional competencies.

The study involved 177 final-year early childhood education students and 10 faculty members from the Department of Pedagogy. All final-year students actively engaged in the relevant courses were included in the sample, ensuring full exposure to the project-based learning approach. The primary objective was to examine how this practice-oriented approach is integrated into the training of early childhood educators to enhance their pedagogical competencies, collaboration skills, and creativity.

The chosen research method was a written survey. Two questionnaires were developed: one for faculty members and another for students. The questionnaires were designed based on the principles explored in the theoretical section of the study, which emphasize that the project method is an effective tool for fostering deep learning. This method actively engages students in the learning process by encouraging them to analyze information, solve problems, and reflect on their experiences. The project method is applicable across various stages and disciplines of study, supporting both individual and group learning. Its versatility lies in its ability to integrate theoretical knowledge with practical skills, helping students develop competencies and strategies essential for solving real-world problems and adapting to an ever-changing environment.

Furthermore, the project method addresses 21st-century educational challenges by fostering creativity, critical thinking, collaboration, and communication skills. To evaluate the effectiveness of the project method in pedagogy modules, it was crucial to collect students' and faculty members' perspectives on its benefits, the skills acquired, the challenges encountered, and overall satisfaction with the approach. The collected data will contribute to assessing the effectiveness of the project method in early childhood educator training.

Both questionnaires consisted of 16 structured questions and one open-ended question, inviting suggestions for improving the project method. The questions for students and faculty members were identical, with adjustments to emphasize the specific activities, experiences, and competencies relevant to each respondent group.

The study was conducted in accordance with the principles of voluntariness, informed consent, and anonymity. The collected data were used solely for aggregate analysis and scientific purposes.

Results

The survey conducted among students and lecturers revealed that the project method is widely applied in the learning process. All participating educators (100%) indicated that they use the project method in their teaching. Half of the surveyed lecturers (50%) reported frequent use of this method, one-third (33.3%) applied it occasionally, and a small portion (16.7%) used it rarely. All lecturers (100%) and nearly all students (96.6%) confirmed that the project method is implemented in the learning process.

Lecturers reported that they most frequently employ the project method to develop practical skills (100%), foster creativity (100%), and enhance teamwork abilities (100%). Half (50%) of the surveyed lecturers also use this method for acquiring theoretical knowledge. Most educators assessed the project method as effective for both transmitting theoretical knowledge (67% effective, 33% highly effective) and developing practical skills (50% highly effective, 50% effective). Their opinions on its impact on student motivation varied: half (50%) considered it effective, 16% viewed it as highly effective, while one-third (33%) regarded it as more effective than ineffective.

The majority of students (79.6%) evaluated the influence of the project method on acquiring theoretical knowledge positively or very positively, while 18.6% regarded it as more positive than negative, and 1.7% assessed it negatively. Students rated the impact of the project method on developing practical skills particularly favorably (91.6%). A very small proportion (5.1%) expressed no opinion, while an even smaller group (3.4%) evaluated it negatively. Regarding teamwork skills, students assessed the method very positively (45.8%) or positively (37.3%). A large majority (79.7%) affirmed that the project method helped them better understand the course material, while 11.9% considered it insignificant and 8.5% claimed it did not aid their understanding.

Most lecturers (66%) provide consultations very often or often, while a small portion (16.7%) do so occasionally or rarely. Students evaluated the usefulness of consultations positively: 45.8% found them very useful, 44.1% useful, 8.5% neutral, and 1.7% entirely unhelpful. Lecturers rated students' teamwork skills positively (67%), though some noted room for improvement. When evaluating group work organization, most students (47.5%) described it as good, 28.8% considered it very well-organized, 16.9% remained neutral, and 6.8% viewed it as poorly organized.

Additionally, 20.3% of students reported high stress levels during project work, while 59.3% experienced moderate stress.

Table 3 Challenges Encountered When Working with the Project Based Method

Statements	Lecturers	Students
Lack of time	33%	55.9%
Task complexity	0%	–
Lack of clarity	–	40.7%
Lack of student motivation	50%	1.7%
Coordination of group work	16.7 %	55.9%
Objectivity of assessment	66.7%	–
Lack of critical thinking and information evaluation skills	16.7 %	–
Project scope management	–	30.5%

**Does the Project-Based Method Help Improve the Following Skills?
(Select All That Apply)**

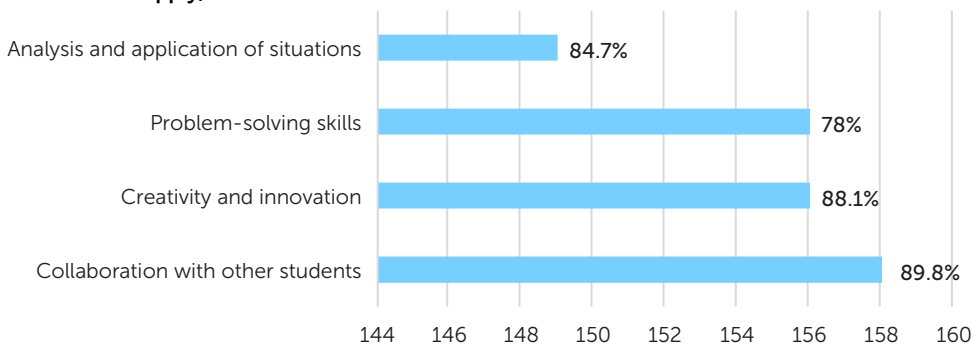


Figure 1 Results of the Student Survey (conducted by the article authors)

Lecturers identified key advantages of the project method: strengthened teamwork (100%), enhanced communication skills (50%), leadership development (50%), fostered creativity and critical thinking (34%), and integration of theory and practice (34%). Students highlighted skill-specific benefits, including improved peer collaboration (89.8%) and enhanced creativity and innovation (88.1%). A significant proportion of students also noted that the project-based method enhanced their ability to analyze and apply knowledge in practical situations (84.7%) and improved their problem-solving skills (78%) (see Figure 1).

Overall, the data show that the project method is effective in developing the most important skills, particularly collaboration and creativity. The majority of students (72.9%–81.4%) state that project activities help prepare for practical tasks in areas such as planning educational activities, observation, identifying individual children’s needs, and collaborating with colleagues and parents (see Figure 2).

**Which Aspects of the Project Method Were Most Beneficial in Preparing for Practice?
(Select All That Apply)**



Figure 2 Results of the Student Survey (conducted by the article authors)

The data analysis reveals that the majority of students acknowledge the benefits of the project method in preparing for practical training. A significant proportion (78%) of students indicate that generating creative ideas was most helpful, while a considerable number (66.1%) emphasize the importance of individual responsibility distribution within teams. Other key aspects include teamwork (57.6%), analysis of practical situations (55.9%), and post-activity reflection (49.2%).

In open-ended survey questions, students suggested improvements: increased application of the project method (35 students), clearer guidelines and objectives (27), more time for projects (24), more efficient team organization (9), promotion of interdisciplinary projects (6), and smaller-scale projects (2). Lecturers also proposed improvements: refinement of assessment criteria (4 lecturers), implementation in smaller groups (2), interdisciplinary collaboration (2), more support in initial stages (2), and clearer definition of the project method (2).

Discussion

The findings indicate that both lecturers and students perceive the project method positively, particularly in relation to the development of practical and teamwork skills. Students strongly emphasized that this approach improved their comprehension of course material and better prepared them for professional practice.

The results reveal both similarities and discrepancies between lecturers and students. While both groups acknowledged time constraints and group work coordination as significant challenges, students reported these issues more frequently, suggesting a greater sensitivity to workload and organizational demands. Interestingly, lecturers identified lack of student motivation as a major barrier (50%), whereas only 1.7% of students agreed.

This discrepancy suggests that motivational challenges may stem less from intrinsic attitudes and more from external factors such as unclear tasks or organizational issues.

Lecturers highlighted assessment objectivity and insufficient critical thinking skills as difficulties, whereas students pointed to lack of clarity and workload management. These differing perspectives indicate a need for clearer assessment frameworks, structured task guidelines, and better workload distribution.

The stress experienced by students further highlights the importance of optimized project planning, improved time management, and enhanced lecturer support throughout the process. Both groups expressed interest in more interdisciplinary projects, which could foster cross-disciplinary competencies, although this would require additional time and resources.

The open-ended responses also underscore complementary perspectives: students requested clearer guidelines, more time, and better team organization, while lecturers called for refined assessment criteria, smaller groups, and more initial-stage support. Together, these suggestions emphasize the need for transparent methodological definitions and structured processes.

Overall, the discussion confirms that the project method effectively develops key pedagogical competencies, creativity, collaboration, and problem-solving. The results validate the study's assumption that the project method serves as a valuable educational approach. Nevertheless, challenges related to assessment, workload, and organization highlight areas requiring refinement.

The limitations of this study include its focus on a single institution and reliance on self-reported data, which may reflect subjective perceptions. Future research could expand to multiple institutions, explore longitudinal effects of project-based learning, and investigate strategies for balancing workload and assessment transparency.

Conclusions

Literature analysis has revealed that the project-based method promotes active student engagement, problem-solving, and reflection. It is applicable to both individual and group learning, bridging theory with practice. The method fosters independence, creativity, and self-confidence. Its successful implementation requires high lecturer competence and a supportive learning environment. The project-based method addresses contemporary social and pedagogical challenges by developing the ability to solve real-life problems.

Survey results indicate that both students and lecturers acknowledge the benefits of the project-based method, yet see opportunities for improvement. Key common areas requiring attention include clearer guidelines, better organization, promotion of interdisciplinary projects, more balanced workload distribution, and more objective assessment. These findings demonstrate that the project-based method has the potential to become an even more effective component of studies if the proposed improvements are implemented. Despite challenges, the project-based method should be more widely adopted in

teacher education, as it significantly contributes to the development of personal, social, and professional competencies.

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THE RELEVANCE OF VOLUNTARY ACTIVITIES IN THE TRAINING OF PRESCHOOL EDUCATION TEACHERS IN LITHUANIA

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ABSTRACT

The paper deals with the issues of the voluntary activities of students during their preschool education studies. European youth policy is promoting volunteering for young people within and beyond the EU to foster learning mobility, solidarity and intercultural understanding. Higher education institutions encourage students' voluntary activities as this contributes to local community initiatives and their own institutional goals, provides experience and skills for further students' personal and career development. Although society acknowledges the importance of volunteering development, Lithuania does not devote enough attention to strengthening the idea of students' volunteering. This paper highlights the selected results of the empirical survey from the year 2023–2024, organised in Kauno kolegija Higher Education Institution, Lithuania. The aim of the study was to reveal the relevance of voluntary activities in the training of preschool education teachers in Lithuania. The results of the survey highlight the extent, motives and benefits of future preschool education teachers' involvement in voluntary activities. 260 students participated in the quantitative survey. The research results revealed that half of the respondents had never participated in voluntary activities but would like to. The majority of surveyed students from the pedagogical studies participated in episodic rather than long-term formal voluntary activities. The primary motivation for engaging in voluntary work is the desire to help others. Students consider volunteering in different activities as important personal challenge, as well as opportunity to develop personal qualities, to try new activities and to gain diverse experiences. Respondents participate in voluntary activities on their own initiative or encouraged by friends, and they usually work not alone but in collaboration with others or as part of a group. Students highlighted that they experienced emotional satisfaction, had the opportunity for self-fulfilment and gained new experiences and skills relevant to their pedagogical careers.

Keywords: *preschool teachers' training, preschool education studies, students' volunteering, students' voluntary activities, volunteering development*

Introduction

Volunteering plays an important role in today's society, expanding on a global scale, fostering the development of civil society and helping to address social issues. The Seimas of the Republic of Lithuania declared the year 2022 “The Year of Volunteering”, encouraging the public to recognize the importance of volunteering and to participate more actively in voluntary activities (LR Seimas, 2021). The initiative emphasized that voluntary work is a vital part of the activities of non-governmental organizations and communities, and that promoting and supporting it requires long-term, trust-based cooperation and coordination between various institutions and agencies at both the national and municipal levels.

Furthermore, the 2019–2027 EU Youth Strategy highlights the promotion of voluntary activities among young people within the EU and beyond as one of its main areas of activities, aiming to foster learning mobility, solidarity and intercultural understanding (European Commission: Directorate-General, 2019). The research report “Development of Youth Volunteering in Lithuania” (Jaunimo savanoriškos veiklos vystymas Lietuvoje, 2020) notes that young people aged 14 to 29 are the age group most actively engaged in volunteering compared to other age groups. In Lithuania, the average number of young people participating in voluntary activities over a 12-month period is approaching the European Union average. Volunteering fosters a sense of responsibility and has a significant positive impact on both physical and mental health. Volunteering experiences help to develop personal skills, encourage socialization and self-realization, and become valuable experiences and future capital that young people can later apply, particularly in the labour market (LR Seimas, 2021).

Students represent a distinct social group of young people and are potential participants in voluntary activities. The students' community is characterized by high levels of civic engagement, reflected in their desire for self-realization across various areas of life. The phenomenon of volunteering is considered as an important factor in promoting social solidarity, building social trust and encouraging prosocial individual behaviour. From the students' volunteering (it can be observed as a new trend in voluntary activities) benefit students, higher education institutions, non-governmental organizations and society as a whole. Universities promote student volunteering as an opportunity to contribute to community life while also pursuing their personal goals (Haski-Leventhal et al., 2020). Voluntary activities during the study period become particularly important providing experiences and skills that support further personal development and create opportunities for informal learning. Although society recognizes the importance of promoting volunteering in Lithuania, insufficient attention is given to strengthening the idea of volunteering, and many processes are left to develop on their own (Jaunimo savanoriškos veiklos vystymas Lietuvoje, 2020).

An overview of various authors' insights (Karasevičiūtė, 2013; Lippman et al., 2015; Khasanzyanova, 2017) on the topic of volunteering shows that volunteering plays a crucial role in fostering young people's social confidence and critical thinking skills. From the voluntary activities benefit the volunteer (by providing opportunities for personal

growth and self-realization), the organizing organization (by mobilizing human resources to achieve its mission and goals) and the state (by building civil society and accumulating social capital, thus contributing to the creation of a welfare state). Volunteering encourages personal development, cultivates a sense of social usefulness, and enhances essential human abilities – it is time devoted to meaningful activities for the benefit of others (Pevnaya & Pevnaya, 2019; Karasevičiūtė, 2013; Jaunimo savanoriškos veiklos vystymas Lietuvoje, 2020).

According to Lippman et al. (2015), higher education does not provide all the knowledge and skills necessary for successful adaptation in modern society. Personal and interpersonal skills complement professional skills and are an essential part of personality development. One of the ways to acquire these important competencies is volunteering in associations and non-governmental organizations (Khasanzyanova, 2017). For students, planning their careers, volunteering can be a significant factor that enhances career management, improves future career prospects and helps secure better job positions. Through participation in voluntary activities, students can recognize their personal potential, acquire skills that are strategically important for their future careers, and prepare themselves for the labour market. Involvement in volunteering allows individuals to understand their value orientations, solve emerging problems, engage with and accept different cultures, explore human relationships, and work as part of a team. Volunteering also develops conflict resolution, critical thinking, and leadership skills, helping students prepare for their careers and build self-confidence (Fényes et al., 2021; Giancaspro & Manuti, 2021).

During the study presented in this article, it was important to examine the extent of future preschool and pre-primary education teachers' involvement in voluntary activities, the motives behind it, and its benefits for personal development. This study aimed to explore the expression, characteristics and personal attitudes of students enrolled in Pre-school and Pre-primary Education programs towards volunteering. To define the essence of the research problem, the following questions were raised: What is the level of engagement of students of pedagogical study programs in voluntary activities? What motives encourage them to engage in volunteering? What are the students' attitudes towards the benefits of volunteering?

Research problem – what is the involvement of students of pedagogical study programs in voluntary activities?

Research object – the expression of students' voluntary activities.

Research aim – to reveal the relevance of voluntary activities in the training of preschool education teachers in Lithuania.

Research objectives

1. To substantiate theoretically the phenomenon of voluntary activity.
2. To reveal empirically the motives for and benefits of participation in voluntary activities among students of pedagogical study programs at Kauno kolegija Higher Education Institution (Kauno kolegija HEI).

Research methods: analysis of scientific literature and documents, a questionnaire (survey), descriptive statistics, content analysis.

The concept of voluntary activity

Voluntary activity is the most visible expression of promoting solidarity, social inclusion and the creation of social capital, having a transformative impact on society (Measuring the Impact of Volunteering, 2018). Voluntary activity (volunteering) is an unpaid activity performed by a volunteer for the benefit of society, with the terms established through an agreement between the volunteer and the organizer of the activity, guided by principles of mutual benefit for society and the individual, cooperation, diversity and flexibility (LR Seimas, 2011). A volunteer is an individual who chooses by his own will to dedicate his time and energy to society and its needs, without seeking financial gain for himself (Kurapkaitienė, 2013).

Voluntary activities can be defined as *formal* or *informal* (Savanorystės esamos situacijos analizė, 2019):

- *Formal voluntary activity* – unpaid contribution through participation in groups, clubs or organizations with the aim to provide the benefit for the people or the environment (e.g., participation in animal protection organizations, etc.);
- *Informal voluntary activity* – unpaid personal help to others who are not related by family ties, without formally engaging in organized activities.
- Voluntary activities can also be categorized by duration (Kurapkaitienė, 2013; Kurapkaitienė & Kėžaitė-Jankūnienė, 2015):
- *episodic* – when a volunteer performs only one in the particular time determined task without committing to any long-term connection with the organizers of the activity;
- *Short-term* – the voluntary activities lasting not more than 3 months, when the volunteers are admitted into an organization to carry out specific short-term tasks and these tasks are more results-oriented than process-oriented;
- *Long-term* – the voluntary activities lasting more than 3 months, when the volunteer deals with a specific, defined task. Long-term voluntary activities are usually formal, that means they are acting within an organization.

There is a growing trend in society for episodic voluntary activity, when volunteers provide help once or several times, either randomly or intentionally, i.e. when needed, e.g. in case of an unfortunate incident (e.g., fire, flood), assisting to a friend occupied in voluntary activity or simply visiting a particular organization without the special commitment. Often people, that do not have enough free time, get involved in this form of activity led by their curiosity, interest or a desire for new social interactions and meaningful activity. Many cannot commit to long-term volunteering but still wish to experience it. Volunteers can choose the area of voluntary activity that aligns with their interests and goals.

Voluntary activities can be carried out in various fields, related to different human issues, such as listed below (Jaunimo informavimo ir konsultavimo vadovas, 2013; Kurapkaitienė & Kėžaitė-Jankūnienė, 2015):

- *Social sector* (helping exposed groups of population, collecting charity for poor, including food, clothing and other necessary items, etc.);
- *Education sector* (volunteers' involvement in extracurricular or post-study activities at institutions);

- *Environmental sector* (e. g., environmental organizations, that organize social and political actions, animal protection organizations, that care for pets abandoned by their owners, etc.);
- *Cultural sector* (arts and cultural events: concerts, festivals, performances, exhibitions, etc., where volunteers assist with organizational tasks, maintaining order and other duties);
- *Sports sector* (international and national sports events requiring various forms of voluntary work, promoting physical activity);
- *Healthcare sector* (organizations that unite individuals affected by a specific illness, representing common interests and facilitating the lives of those living with the disease, as well as home visits to patients);
- *Community sector* (organizations in residential neighbourhoods, villages and local communities addressing local issues);
- *Religious sector* (volunteering in the daily activities and events of church communities).

It is observed that more and more people in Lithuania are becoming interested in volunteering and getting involved, although the concept of volunteering as an activity supported and promoted by state policy is still new phenomenon in Lithuanian society (Paplauskienė, 2021). Volunteering gives youth an opportunity to develop competencies needed for both personal and professional life. It strengthens civic attitudes, helps with self-expression, promotes personal development as well as provides the chance to gain knowledge and skills that facilitate better integration into the labour market (Jaunimo savarankiškos veiklos vystymas, 2020; LR Socialinės apsaugos ir darbo ministerija [LR SADM], 2013, II sk.). Volunteering is especially meaningful for young people. It is often their first activity where they face with the social needs and can quickly observe the impact of their actions as active citizens, in that way reducing the risk of social exclusion (Europos ekonomikos ir socialinių reikalų komiteto nuomonė, 2022).

Methodology

The empirical study is based on the thematical framework presented earlier in this article (Europos ekonomikos ir socialinių reikalų komiteto nuomonė, 2022; Haski-Leventhal et al., 2020; Jaunimo informavimo ir konsultavimo vadovas, 2013; Jaunimo savarankiškos veiklos vystymas Lietuvoje, 2020), e.g. on the idea of *student's participation in voluntary activities during their study period*. This article presents some selected research data gained via statistical analysis of the survey data that were collected from the students of the Preschool and Pre-primary Education program of Kauno kolegija HEI during the study year 2023–2024. A part of these students had already pedagogical experience before they were enrolled in the study program, or they were working in the pedagogical fields at the moment of the conducting the survey, e.g. during their studies. After completing the study program, the most of the graduates from the Preschool and Pre-primary Education program of Kauno kolegija HEI work as preschool or pre-primary education teachers throughout Lithuania (Majauskienė et al., 2024).

The authors of this study found it as important to explore the extent of these students' involvement in volunteer activities, to identify the competencies and experiences they gain during this process, to reveal the level of their participation in voluntary activities, the motives behind it and the benefits for different subjects participating in the process of the volunteering.

For data collection a quantitative research instrument – a questionnaire was developed. The questionnaire consists of 18 questions, organized into four sections: 1. Introduction section. 2. Diagnostic question block (13 questions). 3. Open-ended question (1 question). 4. Demographic questions (4 questions).

The main diagnostic block includes 10 substantive questions related to the main issues of voluntary work: the concept of the voluntary work, the terms used in the voluntary work, the forms and the areas of the voluntary work, the motives for participating in the volunteer work, the characteristics of the activities students are involved in. One open-ended question was included in the diagnostic block to assess the impact of volunteer work on personal development.

The survey was conducted using an online questionnaire and the results were subsequently uploaded into an Excel format for further analysis. Due to limited extent of this article, only a part of the summarized data is presented in the form of tables. In general, the data of an empirical study are considered statistically reliable when the sample is representative with a 95% confidence level and a 5% margin of error. This study is statistically reliable, as the margin of error is 3% for the sample consisting of the students of the Preschool and Pre-primary Education study programs at Kauno kolegija HEI. 260 students of a total 320 students enrolled in pedagogical studies at Kauno kolegija HEI took part in the survey. It represents 81% of the total student population presented above as a respondents group.

During the research the volunteerism of the research participants and the anonymity of the research data were ensured. The research data were used in general and for research purposes only.

Results

The respondents – the students of the pedagogical study programs at Kauno kolegija HEI understand volunteering as an activity performed for the benefit of society without financial compensation (25.8%) or a voluntary activity chosen by an individual own, for which any payment is received (23.2%). Furthermore, the respondents understand volunteering as an expression of altruism and the provision of unpaid assistance. Future teachers participate in voluntary activities occasionally (50.4%) or randomly (47.1%), while only a relative small part of respondents are engaged in voluntary activities regularly (14.6%). Nearly half of the respondents (49.2%) stated that they have never participated in voluntary activities but would like to under the right circumstances. It is important to motivate these individuals and involve them in volunteering.

The majority of those who have participated in voluntary activities reported that it was mostly short-term (1–2 days) episodic work (93.2%). 45.3% of respondents participated in short-term (up to 3 months) voluntary activities, and 31.6% – in long-term (more than 3 months) voluntary activities. 93.2% of the students participated in informal voluntary activities, while 70.5% stated they were involved in formal volunteering. The main reasons for non-participation in voluntary activities were lack of time (43.2%) and lack of information (29.6%).

It is to be mentioned, that there is a slight increasing trend in participation in voluntary activities. A 2019 study on the attitudes of Lithuanian residents towards volunteering showed that 31% of respondents reported having participated or currently participating in voluntary activities (Jaunimo savanoriškos veiklos vystymas, 2020). According to the European Economic and Social Committee, Europeans are now more likely to engage in short-term voluntary activities (Europos ekonomikos ir socialinių reikalų komiteto nuomonė, 2022). There is a noticeable shift from traditional, long-term volunteer activities based on planned commitments to episodic volunteering. Many volunteers are willing to take part in one-time events as they do not want to make long-term personal commitments (Europos ekonomikos ir socialinių reikalų komiteto nuomonė, 2022).

The main motive for participating in voluntary activities is the desire to help others (21.3%), while students also value testing themselves in different activities (14.3%) and improving their personal qualities (13.2%). Additionally, the search for new challenges (15%) and the desire to try out various activities (14.7%) are important motivators. It was revealed that respondents typically participate in voluntary activities on their own initiative (29.6%) or are encouraged by friends (9.9%). During voluntary work, they mostly collaborate with others (34%) or work in groups (16.6%).

The main motive for students' participation in voluntary activities aligns with the findings from the 2019 study of Lithuanian residents' attitudes towards volunteering. This study revealed that the primary motivation for volunteering among Lithuanians was to help others (30%), to achieve personal sense (28%) and to be useful (19%) (Šalies gyventojų požiūris į savanorystę ir turimos savanoriškos patirties tyrimas, 2019).

The analysis of students' participation in volunteer activities reveals that the majority of respondents associate volunteering with specific fields that align with pedagogical competencies. The most commonly chosen fields for volunteering were social activities (74.1%), education (62.3%) and cultural activities (70.3%) (see Table 1). In addition, students showed a noticeable tendency to participate in religious (46.9%) and community-based activities (46%). A relatively smaller percentage engaged in sports-related activities (36.1%).

The research results demonstrate that students tend to engage in voluntary work in areas that directly align with the core tasks of educators, such as working with people, organizing events for children and adults and participating in extracurricular activities with children. These activities are crucial in fostering the development of competencies essential for future educators, including leadership, communication and collaboration.

Table 1 Areas of voluntary activities

Area of voluntary activity	Students' engagement (%)
Social activities (helping exposed groups of population, collecting charity for poor, incl. food, clothing and other necessary items, etc.)	74.1%
Environmental field (various environmental organizations carrying out public and political actions, animal welfare organizations whose members protect and care for pets that have been abandoned or brought in by their owners, etc.).	44.3%
Education field (involvement in extracurricular or post-study activities at institutions)	62.3%
Cultural Activities (Art and cultural events: concerts, festivals, performances, exhibitions, etc., where volunteers help with organizational tasks, maintaining order, and other duties)	70.3%
Religious activities (volunteering in the daily activities and events of church communities)	46.9%
Community activities (Organizations of neighbourhoods, villages, and other local communities that are concerned with the current issues of the local community)	46.0%
Sports activities (International and national sports events that need various forms of volunteer involvement, as well as the promotion of physical exercise)	36.1%
Healthcare sector (organizations that unite individuals affected by a specific illness, representing common interests and facilitating the lives of those living with the disease, as well as home visits to patients)	19.3%

Moreover, the findings suggest that volunteering, while serving its primary purpose of providing aid to others, also plays a significant role in the personal and professional development of future preschool teachers. Volunteering facilitates the enhancement of pedagogical skills and competencies, which are pivotal in the context of teaching and educational work.

Table 2 illustrates the benefits of volunteering for personal development, including self-realization through volunteering, the improvement of personal traits, the development of competencies, and the acquisition of new skills. These factors collectively contribute to the comprehensive growth of students, preparing them for their future roles as teachers.

Additionally, the benefits of volunteer activities as perceived by the participants highlight the valuable impact that volunteering has on personal and professional development. Future pedagogues gain first-hand experience in organizing, leading, and collaborating, which are critical aspects of their professional identity. Through voluntary engagement, students acquire competencies that are highly transferable to their pedagogical careers, thus strengthening their practical teaching abilities.

The findings also emphasize the importance of motivating students who have not yet engaged in volunteer activities, as nearly half of the respondents (49.2%) expressed

a willingness to participate under the right circumstances. This points to an opportunity for educational institutions to further encourage involvement in volunteer activities, offering the students not only an opportunity to contribute to society but also to enhance their pedagogical skills and competencies.

Table 1 illustrates the most common areas where the surveyed students are engaged in volunteer activities. Social, educational and cultural fields dominate, reflecting the significant relevance of these areas in the training of the future preschool teachers. The students' active participation in religious, community and sports activities also highlights the diverse nature of volunteer involvement among future preschool teachers.

The European Economic and Social Committee states in its report, that young people are most active in two main areas of voluntary activities: charity, humanitarian aid and development support (44%), as well as education, training and sport (40%). Moreover, these are the most popular fields of activity among young people across all EU Member States (Europos ekonomikos ir socialinių reikalų komiteto nuomonė, 2022).

In order to assess the benefits of volunteering for personal development as identified by the respondents, an open-ended question was analysed. The responses were grouped into seven subcategories, which were formed by segmenting the meaningful units into sentences and attributing them to specific phenomena according to their distinct features. Within the main category "The benefits of volunteering for personal development", the following subcategories were distinguished: emotional satisfaction, personal self-realization, gaining new experiences, fostering of moral values, strengthening of communication and cooperation skills, establishment of new social connections and problem-solving management. The frequency of responses was calculated, and their ranking according to their significance was established (Table 2).

It can be observed that from the seven identified subcategories in the students' survey, the subcategories that most strongly reflect the essence of the analysed category are emotional satisfaction, personal self-realization and the gaining of new experiences. For future preschool teachers another important subcategory is the fostering of moral values as well as the establishment of new social connections. It has to be noted that voluntary activities are directed not only toward fulfilling the needs of others but also toward satisfying one's own needs, such as strengthening personal values and self-improvement (Pruskus, 2014). The primary "drivers" of voluntary work are not only the opportunity to help others but also the perception of personal meaning (Šalies gyventojų požiūrio į savanorystę ir turimos savanoriškos patirties tyrimas, 2019). Voluntary activities provide young people with opportunities to develop competencies useful for personal life, strengthening civic attitudes (Jaunimo savanoriškos veiklos vystymas, 2020).

An analysis of the responses regarding the impact of volunteering on the development of students' skills, abilities, and competencies revealed that students highly value the "soft" skills acquired during voluntary activities, which are necessary and important in the pedagogical professional field: social, communication, self-control, and self-awareness skills. Students indicated that through volunteering they gained valuable experience

Table 2. The benefits of volunteering for personal development

Subcategories	Statements
Emotional satisfaction	<i>"<...> the satisfaction of seeing a smile on another person's face"; "<...> the valuable use of time spent doing good things"; "The immense joy it brings <...>"; "<...> it will provide you and those around you with positive emotions <...>"; "<...> dedication to others, without expectation of reward, brings to the perception that money is just a material thing, and emotions cannot be bought through helping others <...>".</i>
Personal self-realization	<i>"<...> show what you can do, discover your hidden talents <...>"; "<...> get to know yourself better, including your hobbies, needs, and abilities, it helps you express yourself and share your thoughts and ideas"; "<...> try volunteering abroad. Based on my experience, the conditions are better and there are more opportunities"; "<...> test yourself, push through anything, get a sense of something you want to improve in the future <...>"; "<...> it encourages not just develop your skills, but also your confidence, your daily life might change, find new talents you didn't know you had".</i>
Gaining new experiences	<i>"You'll gain experience for free, it broadens your perspective in every way"; "<...> you can choose the type of activity based on your abilities and interests <...>"; "The knowledge and experience you gain there can't be replaced by any theory or stories"; "<...> you'll gain a lot of experience, so that in the future you'll know what you want to do or try something new, because it will help you develop the skill of not letting small failures get to you and continuing your work until the goal is achieved"; "<...> improve yourself and broaden your horizons <...>"; "<...> the opportunity to grow, improvement, gaining experience <...>"; "You gain new experiences, you lose nothing, you only gain, volunteer work provides experience and knowledge that can't be gained anywhere else".</i>
Fostering of moral values	<i>"<...> not only do you meet people, but you can also clarify your own values, understand / feel other people"; "<...> help those who need assistance, extend a helping hand, spend time with and talk to a lonely elderly person, it's really not difficult and truly a noble, human thing to do"; "<...> it will inspire you to do good in the future, not just look for personal gain"; "<...> value yourself as a person who cares about helping without reward <...>"; "That can't be bought with any amount of money, we must do more than just physical work on this earth to sustain our physical bodies, we must also enrich our souls, and we can only do that by being compassionate and helping others".</i>
Strengthening of communication and cooperation skills	<i>"It's a way to learn communication and collaboration with others"; "<...> it will strengthen the sense of community"; "<...> initiative to collaborate with others"; "<...> the opportunity to find like-minded people with whom you'll collaborate in the future".</i>
Establishment of new social connections	<i>"It will help you make new connections that can be useful in life"; "<...> make new friends, finding new contacts <...>"; "<...> the opportunity to meet new people, new friends"; "The chance to expand your circle of friends, gaining new contacts <...>".</i>
Problem-solving management	<i>"<...> there's not much work, but it's important to understand and know the information at a critical moment"; "<...> the opportunity to laugh at yourself to better understand other people".</i>

in the following areas: teamwork, communication and collaboration, decision-making, organization and planning, emotional regulation, problem solving, and the application of knowledge in practical situations.

Discussion

The analysis of the research data confirmed the relevance of the phenomenon of volunteering discussed in the theoretical part of the paper. The majority of respondents who participated in volunteer activities positively assessed the links between the experience gained during volunteering and self-confidence in their future professional work. The results of the study revealed direct links between voluntary activities and the development of skills important in pedagogical work: future preschool teachers involved in voluntary activities reported gaining communication, collaboration, conflict resolution, critical thinking, and problem-solving skills, which they intend to use in their pedagogical work and community activities. Students indicated that they had further developed the skills they had already acquired through voluntary activities. Preschool education teachers who participate in voluntary activities before their studies, during their studies, and throughout their pedagogical career gain experience, skills, and qualities essential for specialists in this field, which can evolve into key competencies for this profession. Based on the research findings, it can be recommended that students of pedagogical programs or those planning to choose such study programs would engage in voluntary activities, thus not only contributing to society but also acquiring and enhancing personal traits, skills, and competencies necessary for the pedagogical process when working with children, communicating with colleagues, and interacting with the parents of the children. Following the results of the research, institutions of higher education providing pedagogical study programmes should pay more attention for the development of students' volunteering during their studies, as well as discuss the institutional possibilities and existing networks for integrating the students' voluntary activities into the regular study process. It is recommended that HEI personnel encourage the volunteering of students from the pedagogical programs by providing information about volunteering opportunities and benefits, integrating volunteering topics into academic subjects, and volunteering among students.

Conclusions

1. The analysis of scientific literature and documents revealed that volunteering is one of the most important activities promoting individuals' sense of community and social commitment to society. Voluntary activities have a positive impact on society, foster a sense of personal responsibility and positively affect physical and mental health. Volunteering experiences develop personal and professional skills, promote socialization and self-realization, and become experiences that students can later apply in their future profession. In pedagogical activities, the skills and competencies acquired during volunteering can be especially significant, as volunteering can be undertaken by students, pupils, parents of learners, educators and community members, and it can be carried out individually, in groups, or within communities.

2. The results of the empirical study revealed that half of the respondents had never participated in voluntary activities but would like to and plan to participate under the right circumstances. The majority of respondents were engaged in episodic, formal, but not in long-term voluntary activities. The primary motivation for participating in voluntary activities is the desire to help others. For students it is important to challenge themselves in different activities and improve their personal qualities, as well as seek new challenges and test themselves in various roles. Respondents either participate in voluntary activities on their own initiative or encouraged by friends, and during these activities they most often work not alone but with others or in groups. Volunteering typically takes place in the fields of social, educational and cultural activities. When participating in voluntary activities, it is important to meet not only the needs of others but also one's own needs, gaining benefits for personal development. Students noted that they experienced emotional satisfaction, were able to realize themselves and gained new experiences and skills that are important in pedagogical activities.

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PARENTS' UNDERSTANDING OF THE IMPORTANCE OF PHYSICAL ACTIVITY IN THE DEVELOPMENT OF PRESCHOOL CHILDREN

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ABSTRACT

Childhood is the initial stage of life marked by the most rapid and wide-ranging human development. During this period, individuals learn to speak, walk, perceive and process emotions, as well as begin to acquire social experiences. Early childhood, particularly the pre-school years (ages 4–6), is a period of intense physical, cognitive, and socio-emotional growth. Regular physical activity supports the development of motor skills, which are founded on good coordination and balance. Empirical studies have demonstrated clear links between physical activity and cognitive development in children. Movement-based activities – such as exercises, active games, and other forms of physical play – contribute significantly to the development of perception, attention, thinking, and language. Furthermore, movement fosters emotional well-being by providing children with a sense of joy, accomplishment, and self-confidence. Through physical play, children also learn to respect rules and coordinate their actions with the needs of others, thus enhancing their social skills.

While early motor milestones, such as rolling, crawling, and standing, are typically celebrated, later parental concerns about safety often lead to restrictions on physical activity. As a child grows older and more active, activities such as running, jumping, and climbing are frequently curtailed, potentially limiting developmental opportunities. This article examines theoretical perspectives and presents findings from a parental survey, conducted to determine whether parents recognise the role of physical activity in supporting cognitive and socio-emotional development of children. The results indicate that while parents generally recognise the importance of physical activity for health and physical development, many lack a deeper understanding of the developmental significance of movement and physical play, particularly in cognitive and socio-emotional domains.

Keywords: *physical activity, preschooler, physical, cognitive and socio-emotional development, movement games, sports activities, motor skills, socio-emotional skills*

Introduction

In the modern era of rapid technological advancement, both adults and children are spending increasing amounts of time engaged with tablets, computers, smartphones, game consoles and other digital devices, often in sedentary settings. Excessive engagement with digital technologies has been linked to underdeveloped communication skills (Karaca et al., 2025; Zdanevych et al., 2022; Rubene, 2024) and an increasing risk of obesity (Glimore et al., 2024). In addition to contributing to obesity, a sedentary lifestyle is associated with other serious health problems, including cardiovascular disease and diabetes. Promoting regular physical activity from an early age – particularly among children – is essential for preventing these health issues and enhancing overall quality of life.

Childhood is the initial stage of life when the fastest human development takes place (Tiaotrakul, 2024; Burger, 2010). Moreover, movement is one of the innate needs of the human organism. This is most evident when observing young children, as a healthy child is almost constantly in motion. Even when quietly watching or listening to an adult, child experiences internal activity, which is soon expressed through physical movement and play. Yet, do we truly allow children to satisfy this fundamental need? In their efforts to ensure safety, both parents and educators often restrict physical activity, discouraging children from running, jumping, and climbing. However, safeguarding children's health does require environments that support safe, yet maximally active, physical engagement.

Physical activity is very important for the overall development of children (Senol, 2021; Carson et al., 2017; Pate et al., 2019). It supports healthy development of organ systems, enhances cognitive abilities, and promotes social and emotional well-being (Ward et al., 2020). World Health Organization data suggest that physical activity contributes to the healthy development of bones and muscles, reduces the risk of cardiometabolic disorders (such as hypertension, dyslipidaemia, impaired glucose regulation, and insulin resistance), improves body coordination, supports healthy body weight, helps lower levels of anxiety and depression (WHO, 2011), as well as helps maintain optimal health indicators (Senol, 2021).

Several studies have shown that physical activity enhances memory-related cognitive functions and problem-solving skills, which in turn support improved learning outcomes in subjects such as mathematics and languages (Valentini & Gennari, 2024; Carson et al., 2016; Hillman et al., 2009). In Latvia, the curriculum at both pre-school and primary school includes a range of life skills, including those related to safety and well-being. Transversal skills play an important role in education systems globally, and in Latvia, they have received particular emphasis through the introduction of the new competence-based curriculum (Linde et al., 2024). Pedagogical process must be organised in a way that enables children to acquire not only subject-specific knowledge, but also transversal skills such as critical thinking, confidence and boldness in action, self-directed learning, cooperation, civic engagement, and others. In pre-school education, movement-based games offer valuable opportunities to develop these competences. Through physical play and sports activities, children learn to follow rules, regulate their emotions,

and manage their behaviour – for example, by waiting for their turn or dealing with losing a game. These activities also help children develop planning skills, as they learn to sequence their actions purposefully and complete tasks they have started. Several studies highlight the positive effects of physical activity on the development of cognitive abilities – such as perception, attention, memory, and thinking (Páez-Maldonado et al., 2020; Biddle et al., 2019; Smith et al., 2014). During active games and sports activities, children listen, imitate, and focus on coordinating their movements. They practise rhythm, follow verbal instructions, change direction, start and stop in sync with others, and perform movements based on patterns and spoken guidance – all of which support cognitive engagement and development.

Findings in the field point to a strong relationship between physical activity and children readiness for school. It is emphasised that physical activity positively influences various aspects of child development, including cognitive, motor, and socio-emotional domains. When children engage in sufficient physical activity, they are more likely to demonstrate greater readiness for primary education (Senol, 2021; Bingham et al., 2016; Rasberry et al., 2011). A successful acquisition of reading and writing – often regarded as purely academic skills – depends on well-developed motor abilities laying the foundation thereof, such as crawling, walking, running, throwing, catching, and jumping. Several studies emphasise the importance of the interaction between cognitive and motor skills in the development of motor coordination. Children with poor coordination often demonstrate lower academic performance and face significant challenges when entering school (Michel et al., 2011). Thus, physical activity also contributes to the development of movement coordination, which is based on the harmonisation of the nervous and musculo-skeletal systems, resulting in rapid, accurate, and balanced motor responses (Budde et al., 2008). A study carried out by Mr Budde and his co-authors concluded that 10 minutes of daily coordination exercises improve concentration and attention in school-age children. Coordination and attention play a role in children’s cognitive performance, and since the interrelation between motor, cognitive, and emotional development decreases with age, pre-school is the most effective period for supporting their joint development.

Parents’ lifestyles and attitudes towards physical activity significantly influence the development of similar habits in children. In Latvia, results from a study on environment promoting physical activity carried out under the ESF project *Complex Health Promotion and Disease Prevention Measures* show that children in families where parents are physically active or regularly participate in sport are also more likely to be physically active and take part in sporting activities outside school. However, it is still relatively uncommon in Latvia for pupils and adults, particularly parents, to engage in physical activity together: 63% of pupils report rare or very rare joint physical activity with parents, while only about one in three (37%) say it happens occasionally (study on the environment promoting physical activity in educational institutions within the framework of the ESF project *Complex health promotion and disease prevention measures* (identification No 9.2.4.1/16/I/001, 2020)). Other international findings support this pattern, showing that parents – especially mothers – often support physical activity of their children by

bringing them to sports clubs or extracurricular activities, yet are not physically active themselves and are generally reluctant to engage in activities involving physical exertion (Álvarez-Bogantes, 2019).

Methodology

The empirical study was conducted between December 2024 and March 2025.

The research addressed two central questions:

RQ1: To what extent do parents understand the role of physical activity in promoting children's health?

RQ2: How do parents perceive the significance of physical activity in fostering children's cognitive and socio-emotional development?

To address these questions, a semi-structured questionnaire was developed. Surveys are among the most frequently employed research methods, as they provide numerous advantages for both data collection and analysis (Green et al., 2006). The questionnaire was electronically distributed to a purposive sample of preschools in Riga and regional areas, with a request to forward it to parents of preschool children. This approach ensured that the questionnaires were completed exclusively by parents.

In total, 111 parents responded to the survey. Participation was voluntary. Among the respondents, 20 parents ($n = 20$) had children aged 2–3 years, while 91 parents ($n = 9$) had children aged 3–6 years, resulting in an overall sample of 111 participants ($n = 111$). All data were collected anonymously, thereby eliminating the possibility of respondent identification. Quantitative data were analyzed using Excel-based statistical calculations, whereas qualitative data were examined through content analysis. The study was conducted in accordance with the Declaration of Helsinki and the Academic Ethics Codex of the University of Latvia (decision No. 2-3/46, 26.04.2021) and the Academic Ethics Codex of the University of Latvia (decision No. 2-3/46, 26.04.2021).

Results and Discussion

The pre-school education curriculum in Latvia includes targeted sports classes, held at least twice a week and provided by either a sports teacher or a pre-school education teacher. However, this alone is not sufficient to ensure adequate physical activity for children. Pre-school institutions, often attended for an average of 10 hours per day, five days a week, are where children spend most of their time. Therefore, it is essential that pre-school education teachers organise the pedagogical process in such a way that children have opportunities to be physically active throughout the day. Studies show that increased physical activity not only enhances motor skills but also improves intellectual abilities and helps prevent cognitive decline. In contrast, a sedentary lifestyle has been identified as a contributing factor to reduced cognitive function later in life (Sofi et al., 2011). One of the most effective ways to promote movement is through movement games, which can be integrated into both indoor activities and outdoor walks.

Comprehensive development of the child is facilitated by diverse movement games, which:

- enable the development of motor skills (crawling, jumping, throwing, grabbing, walking);
- enhance physical characteristics (coordination, balance, spatial awareness);
- improve fine motor skills, accuracy, and the ability to estimate visually (through play with natural materials);
- promote cognitive abilities, including perception, attention, memory, and thinking (remembering rules, reacting to signals);
- support the development of transversal skills (critical thinking, self-directed learning);
- foster socio-emotional development (empathy, honesty, courage, willingness to help others);
- help develop socio-emotional skills (respecting rules, acting in coordination with others, resolving disagreements calmly);
- bring joy and boost self-confidence;
- provide specific knowledge (by integrating age-appropriate learning content such as colours, animals, nature, letters, numerals, geometric shapes, spatial orientation, etc.).

Despite the wide variety of movement games available and their potential for use in different situations, observations show that, in practice, preschool teachers tend to use them mainly during outdoor walks. Our previous studies likewise demonstrate that children, especially those aged 5–6, spend significant periods sitting, engaged in worksheets and other structured tasks (Stangaine & Augstkalne, 2019). This inactivity is often justified by teachers with reference to the demanding nature of the pre-school curriculum and pressure from parents regarding school readiness.

In order to investigate parents' understanding of the significance of physical activity for children's physical, cognitive, and socio-emotional development, the study employed a semi-structured questionnaire. In addition to answering the survey questions, respondents also provided information regarding their child's age group.

In response to the question on daily activity, respondents described the types of physical activity and typical times when these took place. A large proportion of parents with children aged 5–6 reported that their children engage in physical activity (including movement games, sports) for no more than one hour per day, which is insufficient. According to the World Health Organization, children at a pre-school age should engage in at least 180 minutes of physical activity of any intensity per day, including at least 60 minutes of moderate- to vigorous-intensity activity, spread throughout the day (WHO, 2019). Parental responses to the question about duration of physical activity are summarised in the Table 1.

The collected data show that only a third of children meet the physical activity level recommended by the World Health Organisation (see Table 1). Moreover, while children attend pre-school education establishments with regular sports activities, only 8.2% ($n = 9$) of respondents reported that these are held daily. The majority reported that sports activities take place two (65.5%, $n = 72$) or three (20.0%, $n = 22$) times a week.

Table 1 Daily Duration of Physical Activity Among Children

Duration	Share and count of responses	
	%	<i>n</i>
Less than 30 minutes a day	1.8	2
30 minutes –1 hour a day	36.0	40
1–2 hours a day	34.2	38
More than 2 hours a day	27.9	31

As for the person delivering the sports activities, 85.3% ($n = 93$) of respondents reported that these are given by a sports teacher. However, daily physical activities, such as movement games, relay-races, and walks, should be organised by a group teacher.

Parents play an important role in supporting children's physical development on a daily basis by ensuring both the variety and adequacy of physical activity according to the child's age and needs. However, according to the respondents, only 24.3% ($n = 27$) of parents plan physical activities for their children outside pre-school (for example, through participation in dance, football, or other extracurricular classes). Most children return home after pre-school (most often by car) and engage in unstructured or free play.

The question regarding the main reasons limiting physical activity of children revealed the following key obstacles:

- lack of time was reported by 52.3% ($r = 58$), often due to parents being tired after work and wanting to return home as soon as possible;
- use of technologies was mentioned by 12.6% ($r = 14$); however, excessive screen time is reducing opportunities for active play, free movement or social interaction with peers and adults;
- other reasons included illness, lack of a suitable environment, or absence of play-mates outside pre-school.

Survey results suggest that parents rarely engage in joint physical activities with their children, and when they do, the activities are not designed for shared participation with children. Examples include yoga, walking, dancing, and other individual activities.

A sedentary lifestyle adversely affects both physical well-being and cognitive and social development in childhood. Numerous studies have shown the link between insufficient physical activity, reduced cognitive ability, and poor academic performance (Valentini & Gennari, 2024; Chaddock et al., 2011). Results from this study show that, overall, parents recognise the importance of physical activity for both physical and cognitive development. Respondents reported that physical activity:

- contributes to sustained attention (99.1%, $n = 110$);
- promotes memory development (73.9%, $n = 82$);
- enhances problem-solving skills (69.4%, $n = 77$);
- improves language skills (66.0%, $n = 66$).

Parental responses also reflect an understanding of the broader developmental value of physical activity, particularly its contribution to socio-emotional development. Moreover, physical activity is often perceived not merely as a means of enhancing physical health, but also as a tool for fostering key socio-emotional skills (see Table 2).

Table 2 Socio-Emotional Skills Parents Associate with Physical Activity

Socio-emotional skills	Share and count of responses	
	%	<i>n</i>
Collaborative skills	97.6	80
Sharing skills	67.1	55
Conflict resolution skills	76.8	63
Ability to follow rules and instructions	90.2	74
Ability to take responsibility (leadership)	59.8	49
Understanding emotions of other children	61.0	50

Table 3 Types of Activities Parents Associate with Promoting Social Skills

Activities	Share and count of responses	
	%	<i>n</i>
Structured games with clear rules (e.g., board games)	34.2	38
Free games without set rules (e.g., role-playing games)	29.7	33
Movement and sports games with competitive elements	20.7	23
Musical games and dancing	15.3	17

Parents also pointed out that children generally experience positive emotions during physical activity – such as joy, excitement, and satisfaction – with anger or frustration typically arising in the context of losing. However, anxiety or fear of new challenges was reported by only 19.8% ($n = 18$).

Analysis of responses regarding the role of physical activity in the development of socio-emotional skills shows that most parents (97.6%, $n = 80$) believe it is important for developing collaborative skills. Its contribution to fostering the ability to follow rules and instructions is also widely acknowledged (90.2%, $n = 74$). About three quarters of parents (76.8%, $n = 63$) reported that physical activity helps children develop conflict resolution skills. These results align with scientific literature, which emphasises the value of physical activity in supporting socio-emotional development. Movement and sports games, in particular, not only encourage collaboration and teamwork, but also help children develop empathy, regulate emotions, and build positive interpersonal relationships (Brussoni et al., 2015).

Respondent answers to the next survey question, however, contradict these views. When asked about the types of activities that contribute to the development of socio-emotional skills, most parents selected role-playing and board games, while movement games and other physical activities were mentioned far less frequently (see Table 3).

As shown in Table 3, the majority of respondents (34.2%, $n = 38$) highlighted structured games with clearly defined rules, such as board games, as key to promoting social skills. This choice suggests that parents recognise the importance of rule-following and mutual cooperation, both of which are actively practiced in such games. Role-playing games were also frequently mentioned (29.7%, $n = 33$), indicating that many parents

view them as important for developing empathy and communication among children. However, physical activities – including movement and sports games with competitive elements – were mentioned by only 20.7% ($n = 23$). This trend may reflect a limited understanding of the potential of physical activity in supporting children’s socio-emotional development. Furthermore, these findings reveal some inconsistencies when compared to responses to earlier questions, where parents acknowledged the importance of socio-emotional skills. If the value of socio-emotional development is recognised, yet the role of physically active play in fostering these skills is underestimated, this may point to the need for increased parental awareness and education on the broader benefits of physical activity.

Inconsistencies are also evident in the responses regarding the skills considered important for school readiness (see Table 4; parents were allowed to select multiple options).

Questionnaire results reveal that parents prioritise cognitive and socio-emotional skills for school readiness, while placing less importance on physical development. The most frequently mentioned skills were literacy (72.6%), the ability to focus on tasks (70.5%), and mathematical skills (64.2%), reflecting a strong emphasis on academic and cognitive readiness. In contrast, physical and motor skills, such as coordination of movements (24.2%), ability to maintain balance (16.8%), and ability to catch and throw accurately (16.8%), were selected significantly less often. This imbalance suggests that the physical domain is either overlooked or considered less relevant for school readiness, despite its recognised importance in supporting both physical health and cognitive functioning and socio-emotional development – areas parents themselves identified as crucial. These findings suggest that school readiness is often viewed through an intellectual lens, with the value of a holistic approach underrecognized. Although physical fitness is essential to overall development, only a small share of respondents identified physical

Table 4 Key Competences Parents Consider Essential for Starting School

Competences	Share and count of responses	
	%	<i>n</i>
Reading and writing skills	72.6	79
Ability to focus on tasks	70.5	67
Mathematical skills	64.2	61
Ability to clearly express needs and thoughts	64.2	61
Ability to understand and follow instructions	62.1	59
Ability to regulate emotions	61.0	58
Curiosity and willingness to learn	51.6	49
Ability to coordinate movements	24.2	23
Ability to maintain balance (walking, running, jumping, etc.)	16.8	16
Ability to catch and throw accurately	16.8	16

skills as important for starting school. This points to a possible gap in understanding the developmental role of physical activity and highlights the need to strengthen parental awareness of its importance for a successful transition to school.

Conclusions

- The study shows that while parents generally recognise the role of physical activity in supporting children's health and physical development, their understanding of its cognitive and socio-emotional benefits – particularly through movement and sports games – is more limited. Although many acknowledge its impact on attention, memory, problem-solving, and social skills, parents generally tend to prioritise structured or role-playing games over physically active ones for promoting socio-emotional development.
- Cognitive and socio-emotional skills are valued, yet the role of physical activity in developing them is often underestimated.
- When considering school readiness, parents tend to prioritise cognitive and socio-emotional competences, placing less value on physical development (such as motor coordination, balance, and agility), even though these skills are fundamental to holistic development and support learning processes.
- Research findings indicate that many preschoolers do not meet the World Health Organization recommendation of at least 180 minutes of physical activity per day.
- Parental involvement in shared physical activities with children is relatively low. Instead, parents more frequently participate in individual activities that are not intended for joint engagement. Time constraints and the influence of technology are mentioned as the main factors limiting physical activity of children.
- The study highlights the necessity of increasing parental awareness about the developmental benefits of physical activity, particularly in relation to cognitive and socio-emotional development of preschool children.

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MULTICULTURAL, INTERCULTURAL AND TRANSCULTURAL CONCEPTS IN THE CONTEXT OF CULTURAL STUDIES

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ABSTRACT

This article offers a critical review of the concepts of multiculturalism, interculturalism, and transculturalism within the framework of cultural studies and educational practice. Although interconnected, these approaches rest on distinct theoretical foundations and are applied in different disciplinary and regional contexts, which often results in terminological ambiguity and methodological challenges. The study aims to systematize existing interpretations, clarify differences and overlaps between the concepts, and provide recommendations for their precise use in educational and research settings. The methodology combines qualitative analysis of terminology, comparative analysis of key academic sources, and content analysis of publications on cultural diversity, educational policy, and globalization. This multi-layered approach makes it possible to trace the evolution of the three concepts across cultural and educational contexts, as well as to assess their adaptability to contemporary challenges such as migration, transnational interactions, and digital transformation. The findings indicate that multiculturalism is most often linked to institutional and political-legal strategies aimed at recognizing cultural differences, ensuring equal opportunities, and protecting minority rights. Interculturalism, by contrast, emphasizes processes of communication and dialogue across cultures, making it particularly relevant in educational environments. Transculturalism moves beyond fixed cultural boundaries, highlighting hybridization, the emergence of a “third space,” and the formation of new, fluid identities. The significance of this study lies in its practical relevance for both curriculum development and the advancement of scholarly discourse on cultural diversity. A clear differentiation and consistent application of the three terms reduce the risk of conceptual confusion, and support the creation of more effective strategies in cultural education and interdisciplinary research.

Keywords: *intercultural education, multiculturalism, interculturality, transculturality, intercultural competence, cultural globalisation*

Introduction

Contemporary processes of globalization, accompanied by migration, digital transformation, and changes in social structures, exert a profound influence on the nature of

cultural interactions and on the formation of identities. Under these conditions, questions of cultural diversity become not only a subject of academic inquiry but also a pressing challenge for educational practice. To describe and interpret these transformations, several key concepts have become firmly established in scholarly and pedagogical discourse: multiculturalism, interculturality, and transculturality. These concepts are chosen as the focus of analysis because they represent three of the most significant perspectives, namely the political and legal, the pedagogical, and the philosophical and cultural.

Taken together, these three concepts form a systematic framework for analysing cultural diversity and allow it to be examined at multiple levels, ranging from state policy to individual experience. Their distinctive content is revealed through the lens of identity. Multiculturalism establishes the conditions for collective identity among ethnocultural groups within the framework of institutional recognition of difference. Interculturality emphasizes the formation of identity through practices of dialogue and exchange in educational and social contexts. Transculturality highlights the potential of hybrid and multiple identities that emerge at the intersection of cultures and that extend beyond national and ethnic boundaries. Engaging with these concepts therefore makes it possible not only to clarify the theoretical foundations for the analysis of cultural diversity but also to identify the contemporary mechanisms through which identities are shaped in a globalized world.

Despite the wide circulation of these terms, there is still no unified and consistent interpretation of them, which results in ambiguity and methodological difficulties in practical application. These difficulties manifest themselves in several dimensions. The blurred boundaries between the concepts complicate the design of educational programs, since educators are not always certain which specific model of cultural interaction they are implementing, whether it is oriented toward the recognition of cultural differences, toward the organization of dialogue, or toward the formation of new hybrid identities. The conflation of terms in scholarly literature leads to the fragmentation of research approaches, as different authors employ the same categories in divergent ways. This hinders the comparability of results and the development of a shared methodology. Terminological uncertainty also affects the practical dimension of educational policy. Some policy documents are oriented toward multicultural values, others toward intercultural dialogue, and still others toward transcultural processes, which creates inconsistencies between formal declarations and actual pedagogical practice.

Interdisciplinarity adds an additional layer of complexity. In cultural studies, multiculturalism and transculturality function primarily as theoretical categories for the analysis of identities, whereas in education they serve as practical guidelines for the development of teaching strategies. In the absence of coordination between these perspectives, the exchange of research findings is hindered. Cultural theorists and educators may use the same terms in different senses, which leads to misunderstandings and divergent interpretations. This lack of coherence obstructs the construction of a common scholarly language, makes interdisciplinary discussions fragmented, and renders results difficult to compare. As a consequence, educational models are insufficiently adapted to

contemporary challenges. This reduces the possibility of developing coherent strategies, leads to duplication of research, limits the potential of students in cultivating intercultural competence, and generates contradictions in the conceptualization of identity in both educational and scholarly contexts.

The relevance of this study lies in the need to overcome conceptual fragmentation and to provide a systematic overview of the main concepts that shape the contemporary discourse on cultural diversity and identity. The aim of the study is to clarify the content of the notions of multiculturalism, interculturality, and transculturality, to identify the specific features of their use, and to outline the prospects for their application in educational and scholarly practice. Such an approach makes it possible to avoid terminological confusion, strengthen the effectiveness of the methodological framework, and offer clearer guidelines for the development of educational strategies under the conditions of intensifying globalization and cultural hybridization.

Literature analysis

The study of the concepts of multiculturalism, interculturality, and transculturality has over the past decades acquired a stable position in cultural, sociological, and educational research. The introduction of these concepts into scholarly and pedagogical discourse has been driven by processes of globalization, the increase in migration, and the need to find new ways of describing cultural diversity. At the same time, different authors have proposed divergent interpretations and analytical emphases, resulting in terminological ambiguity and methodological challenges. The classical works of Kymlicka (2007, 2010) established the foundations for understanding multiculturalism as a political and legal strategy for recognizing cultural differences and protecting minority rights. His theory highlights institutional mechanisms that ensure the participation of ethnocultural groups in social life. Building on these ideas, liberal, conservative, and radical models of multiculturalism were developed (Sleeter, 2024; Mansouri & Elias, 2025), each of which defined in distinct ways the acceptable boundaries of cultural autonomy. In addition, researchers have connected multiculturalism with questions of social integration and welfare (Safdar et al., 2023), with personal development and identity formation, and, in the educational context, with policies of equal access and anti-discrimination strategies.

Criticism of multiculturalism has highlighted its limitations, the potential risk of segregation, and its tendency to reduce cultures to static, closed, and homogeneous entities (Joppke, 2003; Meer, Modood, & Uberoi, 2019; Kennedy & Aman, 2024; LeVan, 2024). Since the early 2000s, increasing attention has been directed toward the concept of interculturalism, which stresses not merely the coexistence but the interaction of cultures. The works of Dietz and Guilherme (Dietz, 2009; Guilherme & Dietz, 2015) conceptualize interculturalism as a dynamic process of dialogue, exchange, and the joint construction of new meanings. In the European context, the term is more frequently employed within educational programmes (Leeman & Reid, 2006; Kalogerogianni, 2025), whereas

in the United States and Australia the notion of “multicultural education” is more prevalent (Nieto, 2006; Banks & Banks, 2019).

Intercultural education is understood as a pedagogical strategy aimed at fostering critical thinking, empathy, and civic competence (Portera, 2011, 2021). Scholars emphasize its significance for the development of intercultural competence (Deardorff, 2009; Holmes 2017), which enables students to perceive cultural differences not as barriers but as resources. In contrast to multiculturalism, which is primarily concerned with normative frameworks and institutional arrangements, interculturality is conceived as a practical pedagogical model oriented toward dialogue and exchange.

The concept of *transculturality* has been consolidated in academic discourse through the works of Welsch (1999) and Bhabha (1994). Bhabha introduced the notion of the “third space,” a site of cultural intersections and hybridity where new identities emerge. Welsch, in turn, critiqued traditional boundaries of culture and underscored its dynamic and hybrid character in the context of globalization. Building on these perspectives, Epstein (2009) proposed the concept of “transculture” as a symbolic space that transcends national and ethnic boundaries. From a decolonial perspective, Tlostanova (2012) reinterpreted the earlier notion of *transculturation* developed by Ortiz (1995), stressing its asymmetry as well as the experiences of cultural loss and acquisition. Within this approach, transculturality is understood not as an abstract ideal but as a concrete process of forming hybrid and multiple identities, a process particularly relevant in post-Soviet and postcolonial contexts.

Contemporary research indicates that multiculturalism, interculturality, and transculturality are not isolated categories but rather interconnected analytical perspectives. While multiculturalism primarily addresses the institutional and legal dimensions of cultural diversity, interculturality emphasizes educational and communicative processes, and transculturality extends beyond fixed identities by describing new hybrid forms. A review of the literature demonstrates that each of these concepts emerged in distinct contexts and responded to specific historical challenges. Recent research (Grünfelder et al., 2024) increasingly advocates viewing them not as competing but as complementary approaches to the analysis of cultural processes and educational practices. This tendency underscores both the relevance of critically revisiting the terminology and the necessity of a clear differentiation of concepts within academic and pedagogical discourse.

Research design and methodology

A qualitative approach was chosen for this study, focusing on the analysis of cultural terms such as multiculturalism, interculturality and transculturation in the context of pedagogical practices and their changes in the context of globalisation. The material for this study includes both peer-reviewed articles and practice-oriented documents (for example, publications by UNESCO and the Council of Europe) related to cultural diversity and educational policy. The selection of sources was based on thematic relevance

and disciplinary scope (cultural studies, sociology, education) which made it possible to integrate different levels of analysis. This approach makes it possible to gain a deeper understanding of the dynamics of changes in these terms and to determine the impact of globalization, migration, and transnational interaction on educational practice.

Content analysis is employed to examine the evolution and use of cultural terminology in educational contexts. The comparison of terms has been conducted primarily within the European context, with attention to their specific applications across different countries. The analysis spans the period from the early 2000s to the present, which makes it possible to trace how the interpretations of these concepts have been transformed under the influence of globalization, migration, educational reforms, and digital transformation.

This method allows us to identify key themes and trends in the use of terms, as well as to understand how these terms are interpreted in the context of globalisation and migration. In addition, comparative analysis is applied to relate changes in cultural terminology to previous studies and theoretical approaches, to highlight shifts in the interpretation of concepts, and to emphasize the importance of their adaptation to new sociocultural realities.

The changes were examined through three interrelated perspectives: historical, disciplinary, and educational. From a historical perspective, the analysis traced the evolution of the concepts from their initial emergence in scholarly discourse to their contemporary interpretations. This revealed how multiculturalism shifted from a politico-legal paradigm to a more critical and socially oriented approach, how interculturality developed from the idea of cultural dialogue to the cultivation of competences within educational settings, and how transculturality came to be used to describe processes of hybridization and the formation of new identities in the context of globalization. From a disciplinary perspective, the focus was on differences in the use and interpretation of these terms across cultural studies, sociology, and education. In cultural studies, they are employed to analyze identity transformations and cultural boundaries; in sociology, they are applied to the study of practices of interaction and integration; and in education, they provide a framework for curriculum design and the development of intercultural competence.

The educational perspective highlighted changes in pedagogical practice, where these concepts have found their most direct application. The analysis showed that in recent decades multiculturalism has often functioned as a normative framework of values, interculturality as a practical instrument for fostering dialogue and developing competences, and transculturality as a methodological perspective that incorporates processes of cultural hybridization and digital transformation. This multiperspectival approach not only clarifies the distinctions among the concepts but also demonstrates their complementarity within contemporary educational and sociocultural contexts.

It should be acknowledged, however, that certain aspects of terminological change are difficult to assess due to divergent interpretations across cultural contexts. These divergences stem from national educational traditions, policy orientations toward cultural diversity, and variations in research methodologies. In some contexts, the terms are formalized in policy documents and acquire an institutional dimension, while in

others they remain primarily scholarly categories shaped by specific academic traditions. This plurality of meanings complicates the development of universal definitions, yet it also highlights the need for critical analysis and systematic clarification. Accordingly, the present study emphasizes not only the conceptual distinctions among these terms but also their practical significance for educational strategies and academic discourse.

Multiculturalism: how it differs from multi-ethnicity

The term “multicultural” describes the existence of multiple cultures within a single society, where each culture preserves its traditions and characteristics without seeking to assimilate into other cultures. In such a society, diversity and respect for differences are valued, but cultures can coexist in parallel without necessarily interacting actively (Parekh, 2000; Meer, Modood & Zapata-Barrero, 2016). The concept of *multiculturalism* assumes the existence of clearly distinguishable, homogeneous cultures within a single state. It aims to find ways to promote tolerance, mutual understanding, respect and conflict prevention. In a multicultural society, attention is paid to the formation of individual identities, recognising the uniqueness of each person. However, an important question arises: how is personal development possible in such a society if culture is represented as a closed and homogeneous group? And how, living in a culturally diverse society, can we communicate with each other as equals without violating the interests of others? The term *multiculturalism* should be distinguished from the concepts of multi-ethnicity and cultural diversity since multi-ethnicity refers to historically formed groups of people united by common characteristics such as language, origin, culture, common territory of residence and self-awareness (Jenkins, 2008).

Cultural diversity, on the other hand, refers to the presence of different cultural groups in a society, characterising its cultural heterogeneity. Both phenomena describe a multicultural society, which is characterised by more complex organisation and governance. In implementing the concept of multiculturalism, a set of measures is used aimed at creating social and economic conditions to support cultural minorities, adapting the institutions of the host culture, and ensuring the effectiveness of legislation against national extremism and terrorism. Other important aspects include equal access to education, the creation of an effective communication space, freedom of choice of language of instruction and communication, respect for religious norms, and monitoring the effectiveness of projects and programmes aimed at intercultural interaction (Kymlicka, 2007).

Multiculturalism is not only a national policy but also a set of social practices. It develops at various levels: in everyday life and communication, in the media, in organisations, institutions and social institutions. Despite its close connection with political practice, multiculturalism, as a social phenomenon that goes beyond the political context and as a phenomenon that determines the nature of socio-cultural processes in modern society, requires scientific analysis. Contemporary research emphasizes that multiculturalism operates across multiple levels, ranging from educational policy to the formation of ethical orientations and civic identity. It is understood as a resource for personal development, a factor in integration and the redistribution of resources within welfare

states, and a subject of educational policy and practice (Kennedy & Aman, 2024). Within philosophical discourse, multiculturalism has been reconsidered and reinterpreted, as reflected in recent encyclopedic and analytical overviews (Song, 2020).

This circumstance has led to efforts to define a more universal framework of multiculturalism, resulting in liberal, conservative, and radical left theories (Modood, 2007). While earlier discussions (e.g. Kymlicka, 2007) spoke of models such as ‘soft’, ‘hard’, ‘dominant’, and ‘egalitarian’ depending on the degree of minority assimilation, recent work (LeVan, 2024) highlights internal tensions even within liberal models, notably between majoritarian pressures and demands for recognition.

The “hard” model of multiculturalism asserts the need for a mosaic society and the separation of cultural groups, rejecting integration as a hidden process of assimilation. Kymlicka defends this model, arguing that the principles of liberalism, including individual freedom, allow for the protection of minority rights only to the extent that this does not violate the freedoms and autonomy of the individual (Kymlicka, 2007). In contrast, the “soft” model of multiculturalism emphasises the promotion of social integration of different ethnic groups (Meer, Modood & Uberoi, 2019; Triandafyllidou, 2020). However, Kymlicka considers the policy of “soft” multiculturalism to be ineffective because it does not solve the problems associated with the existence of national minorities in the state (Kymlicka, 2007). In turn, the “dominant” model of multiculturalism emphasises the leading role of the majority culture. The disadvantage of this model is the risk of cultural segregation (Vertovec, 2021).

The “egalitarian” model of multiculturalism is focused on removing barriers that limit the participation of cultural minorities in the social, political, and economic life of society. The implementation of this model may lead to changes in the ethno-cultural structure of the host country’s population, which also carries the risk of disintegration. Theorists of radical multiculturalism argue that in countries with multiple cultural groups, the state should welcome their presence and guarantee conditions for the preservation of their norms and traditions. Radical left-wing multiculturalism has been described as a perspective in which groups and cultures are seen as clearly delineated and identifiable communities that coexist like elements of a mosaic, maintaining rigid boundaries between them (Benhabib, 2002).

Conservative multiculturalism emphasizes the social isolation of minorities from the majority in order to preserve both minority and majority identities. These theories are primarily political concepts. At the same time, the phenomenon of multiculturalism requires sociological analysis that can explain it as a general social practice. An important feature of such a theory is its dynamism: it is not static and homogeneous, but includes various opposing views on the growing cultural diversity of global society. As Johansson (2022) notes, the theoretical challenges of multiculturalism lie precisely in acknowledging this complexity and defending it as a dynamic and context-dependent phenomenon. Thus, the content of the concept of multiculturalism can vary depending on the position and interests of those who analyze it (Bernstein, 1994; Modood, 2019).

Conceptual distinctions between interculturalism and multiculturalism

The term “intercultural” emphasises the interaction between cultures, highlighting their active communication and exchange of experiences, which leads to mutual influence. This concept is more dynamic, unlike multiculturalism, where cultures tend to coexist side by side rather than actively interact (Guilherme & Dietz, 2015). The intercultural approach involves seeking common ground and mutual understanding between different cultures. In turn, multiculturalism is associated with the concept of ‘neighbourhood’ of cultures, while interculturalism places greater emphasis on their ‘interaction.’ The conceptual field of multicultural and intercultural education is actively discussed, particularly in foreign scientific literature. Some researchers use the terms “multicultural education” and “intercultural education” as synonyms (Nieto, 2006; Banks & Banks, 2019) while others emphasise the differences between them (Portera, 2021). Recent publications also highlight a shift in emphasis: interculturality is increasingly associated with the cultivation of dialogue, critical thinking, and civic competences, whereas multiculturalism remains more closely tied to the institutional and legal policies of cultural diversity (Kalogerogianni, 2025).

The term *intercultural education* has traditionally been more prevalent in European discourse, while in countries such as the United States and Australia, the term *multicultural education* has been more commonly used (Leeman & Reid, 2006). Earlier scholarship often blurred the distinction between the two, with Sleeter and Grant (2003) noting that multicultural education can evolve in multiple directions, including approaches that address structural inequalities, whereas intercultural education places greater emphasis on dialogue and intercultural relations. More recent work, however, highlights that the meanings and uses of these terms are highly context-dependent and shaped by local political and cultural environments (Conti, 2025; Kalogerogianni, 2025). Scholars now stress that rather than being fixed or opposed categories, intercultural and multicultural education should be seen as overlapping and evolving concepts that reflect the dynamic realities of educational practice in diverse societies (Elias & Mansouri, 2023).

In Europe, there is a tendency to perceive the multicultural concept as less dynamic, associated with cultural diversity, while the intercultural concept is used to denote interaction and relations between different cultural groups in conditions of cultural diversity (Hill, 2007; Landini, 2025). Intercultural relations can be understood as interactions, negotiations, and processes, whereas multiculturalism more broadly reflects the characteristics of societies and is often used in a descriptive context (Gundara, 2000).

A. Portera presents multiculturalism as a widely accepted and successful approach in diverse societies, emphasizing that individuals from different ethnic, cultural, and religious backgrounds can live together based on mutual respect and understanding (Portera, 2021; Zapata-Barrero, 2017). This model has had a positive influence on educational settings, fostering a culture of respect and intercultural awareness among teachers and students globally. At the same time, Portera distinguishes *multiculturalism* from *interculturality* by explaining that multiculturalism focuses on the peaceful coexistence of

distinct cultures, often with limited interaction, whereas interculturality involves a more dynamic process of interactive integration through continuous exchange of ideas, values, and practices across cultural groups. Nevertheless, multiculturalism does not fundamentally challenge the ways in which immigrants are integrated into society. Two forms of integration can be identified here: primary integration, in which immigrants, while experiencing nostalgia for their original culture, gradually adopt the values and lifestyle of the host country; and secondary integration, which involves a more complete adaptation, including the adoption of the host country's language, values, rules, and social norms (Portera, 2011).

Interculturalism, which is widely developed in Europe, has been successful in significantly changing the education system. It is believed that the intercultural model creates opportunities for personal and collective enrichment. A person from another ethnic group with a different culture represents a positive opportunity – an opportunity to discuss and learn about values, norms and behaviours. According to UNESCO's "Guidelines on Intercultural Education" (2006) and its later "Intercultural Competence: Conceptual and Operational Framework" (2018), multiculturalism refers to the cultural diversity within a society, encompassing aspects such as ethnicity, nationality, language, religion, and socio-economic status. However, it often does not explicitly address other aspects of identity, such as gender and race. In contrast, interculturalism is described as a more dynamic concept that focuses on the evolving relationships and interactions between cultural groups. It builds upon the foundation of multiculturalism and emphasizes dialogue, exchange, and mutual understanding across local, regional, national, and international levels.

Intercultural competence and cross-cultural research

Intercultural competence is oriented toward fostering respect for, and engagement with, cultural diversity. It treats cultural difference as a positive force for personal development and societal advancement. In education, this approach promotes the integration of diverse perspectives while maintaining cultural distinctiveness, supporting intercultural dialogue and the preservation of cultural identity in a globalized world. Within educational institutions, especially at the higher education level, intercultural competence fosters the ability to recognize both similarities and differences among cultures. A key component is encouraging students to view their own cultural traditions through the lens of others, a process that challenges stereotypes and deepens mutual understanding (Deardorff, 2009). The objective is not to impose external values, but to offer students the opportunity to engage critically and selectively with aspects of other cultures that they find meaningful and acceptable.

The term "cross-cultural" is often defined in academic literature as referring to interactions or comparisons between distinct cultural systems (Triandis, 1994). It is sometimes extended to address the new understandings that can emerge at the intersection of diverse traditions (Holmes, 2017). In some contexts, the term is also used as a synonym for *intercultural*, which emphasises interaction between cultures (Dervin, 2016). However,

there is a subtle difference in how these terms are used across disciplines. *Cross-cultural* generally stresses the comparison of cultures and their specific characteristics, while *intercultural* refers to more dynamic and interactive communication between cultures, often with a focus on processes of adaptation and mutual understanding (Gudykunst, 2004).

However, when it comes to research, there is a fundamental difference between *cross-cultural* and *intercultural* research (Spitzberg & Changnon, 2009). Cross-cultural research aims to compare cultures according to predefined variables, while intercultural research focuses on studying direct interactions between members of different cultures. According to Matsumoto and van de Vijver (2010), no matter how many cross-cultural studies comparing Americans and Japanese are conducted, they will not provide information about how representatives of these two cultures communicate with each other during real interactions. Recent studies indicate that in European discourse the term *intercultural education* appears more frequently, particularly in contexts related to citizenship and intercultural dialogue (Conti, 2025; Kalogerogianni, 2025), whereas *multicultural education* is more commonly used in policy frameworks and practices linked to the right to cultural diversity (Boustar et al., 2025).

Cross-cultural research can be conceptualized in both narrow and broad terms. In its narrower application, it focuses on the analysis of participants from different cultural backgrounds who engage in comparable tasks or interactions, with an emphasis on identifying differences across cultural groups. In its broader sense, cross-cultural research seeks to uncover both universal principles (those that apply across all cultures) and culture-specific insights, which are valid only within particular cultural contexts (Matsumoto & Juang, 2017). As Matsumoto and Juang (2017) observe, cross-cultural research is not limited to any specific thematic domain. It may address a wide array of topics, including linguistic variation, enculturation and socialization processes, the manifestation of psychological disorders in different cultural contexts, and numerous other phenomena relevant to understanding human behavior in diverse settings.

A significant proportion of cross-cultural research falls within the category of hypothesis-testing studies. These studies are designed either to test theoretical propositions or to generalize findings to broader populations beyond the original study sample. Matsumoto and Juang (2017) distinguish between two main types of hypothesis-testing research: the first focuses on identifying correlations or associations within a set of variables, while the second aims to uncover causal relationships between those variables. Methodologically, hypothesis-testing research involves a series of critical decisions, including the selection of an overarching theoretical framework, participant recruitment, the operationalization of variables, and the development of standardized research procedures. For example, in studies related to education, the unit of analysis may be defined as a classroom or a student group.

Matsumoto and Juang (2017) further identifies two typical approaches within cross-cultural hypothesis-testing research. The first involves direct comparisons of two or more cultures based on a specific variable of interest, with the aim of detecting

significant differences across cultural groups. This process is metaphorically described by the authors as ‘peeling an onion’, whereby successive layers are removed to reveal the underlying causes of observed cultural phenomena (Matsumoto & Juang, 2017). An illustrative example of cross-cultural research is the World Values Survey (WVS), a long-term project initiated in 1981 by R. Inglehart. The WVS has conducted nationally representative surveys in nearly 100 countries and its primary aim is to explore how people’s values and beliefs evolve over time and the social and political impact of these changes. In their seminal work “Modernization, Cultural Change, and Democracy: The Human Development Sequence” (2005), R. Inglehart and C. Welzel analyze data from the WVS to examine the shift from traditional to postmodern values (Inglehart & Welzel, 2005). The researchers argue that economic development, democratization, and rising levels of education contribute to a cultural shift towards self-expression values, which in turn foster democratic institutions and human development.

From interculturality to intercultural education

Interculturality and cross-cultural studies are closely connected through their shared focus on cultural differences, however they diverge in their primary areas of emphasis. Interculturality is a process of interaction and mutual understanding between cultures, involving the exchange of knowledge, values, norms and practices between different cultural groups (Guilherme & Dietz, 2015). This process can lead to the integration of elements from different cultures into a new, more diverse and flexible environment. It is important to note that interculturalisation does not imply the assimilation of one culture into another, but rather involves dialogue and mutual enrichment (Barker, 2015; Zapata-Barrero, 2017). According to the concept of “intercultural”, this term emphasises the recognition of multiple cultural groups, their mutual influence, and their desire for mutual understanding and interaction. In this context, the norms and values of one’s own culture are often perceived as correct, which can overshadow goals such as creating equal opportunities for participation in society and equal chances for realising one’s potential. The principle of interculturalism is often understood as a normative ideal, aiming to foster harmonious interaction grounded in the mutual recognition of cultural differences. However, the effective implementation of this principle depends on the absence of systemic issues such as unemployment, poverty, and discrimination (Council of Europe, 2008; OECD, 2025). Interculturalism can fully function within a genuinely democratic society, although such a system, despite its aspirational value, remains out of reach. This underscores the complexities and limitations encountered when attempting to apply intercultural principles in contexts where deep-rooted social challenges persist (Peters et al., 2025).

Intercultural education emerged from this broader theoretical framework as both a pedagogical and social response to growing cultural pluralism. Initially gaining traction in the 1960s as a strategy for integrating migrant children into host societies in Europe and North America, it has since evolved from an assimilationist approach into a dialogical and inclusive model that acknowledges the fluid and evolving nature of

culture. Among the foundational voices in this field is J. S. Gundara, whose work laid the theoretical and institutional groundwork for intercultural education. In his work “The Case for Intercultural Education in a Multicultural World” (2015), Gundara critiques the limitations of multicultural models and advocates for intercultural education as a path toward equity, dialogue, and global citizenship (Gundara, 2015).

Complementing these developments, a comprehensive overview of diversity in education is provided in the “Encyclopedia of Diversity in Education” (2012), which systematically examines both individual cases and global trends concerning inclusion, marginalization, and educational transformation (Banks, 2012). The work outlines a broad spectrum of diversity categories, such as alternative educational models, special educational needs, migration, nationality, race, ethnicity, religion, gender, sexuality, civic identity, and human rights. Although legal frameworks governing these categories vary across countries, the work offers a foundational structure for inclusive educational practices.

This intersectional approach encourages educators and scholars to account for multiple, overlapping identities and to link historical conditions with contemporary realities. Comparative research in higher education similarly demonstrates the importance of tutor involvement in supporting diverse learners across national systems (Bhopal & Danaher, 2013). Diversity also manifests in everyday experiences, including traditions, housing, language, and expressions of identity, all of which influence educational interactions. Policy-focused scholars expand this conversation by examining migration, diversity, and citizenship education in contexts shaped by political instability and population movement (Banks, Suárez-Orozco, & Ben-Peretz, 2016). In a time when nationalist rhetoric and exclusionary practices challenge inclusion, educational institutions are increasingly seen as key sites for fostering unity in diversity and advancing democratic values (Banks & McGee Banks, 2019). Educators are therefore encouraged to adopt innovative strategies that are responsive to the complexities of today’s multicultural classrooms. Language and culture education have likewise become critical tools for cultivating intercultural and international dialogue, particularly in global citizenship education (Byram & Wagner, 2018). Yet systemic disparities in resource distribution continue to hinder efforts in both multicultural and intercultural education, frequently resulting in what some perceive as structural violence (Palaiologou & Gorski, 2017).

Although multiculturalism has been criticized for its perceived limitations, scholars argue that both multiculturalism and interculturalism remain essential frameworks for addressing cultural diversity. While both seek to achieve unity in diversity, interculturalism emphasizes direct interaction and mutual influence, distinguishing itself as a more fluid and engagement-oriented alternative (Mansouri & Elias, 2025; Kalogerogianni, 2025). Crucially, attitudes toward diversity are shaped from early childhood and influenced by various forms of literature, education, and artistic representation. The cumulative and intersecting nature of marginalization is increasingly recognized across disciplines (Pagani, 2019). Within educational practice, both intercultural education and inclusion aim to promote equitable learning opportunities. Intercultural education values cultural difference as a resource, integrating community interaction and cultural

preservation into the learning process. Inclusive education, in contrast, prioritizes academic achievement and individual well-being. In both models, differentiated instruction remains central, offering strategies to dismantle bias, foster equity, and create supportive learning environments tailored to the diverse needs of students (Van Allen & Katz, 2020).

Transculturality and processes of cultural globalisation

Homi K. Bhabha challenges the notion that cultures are isolated or hierarchically staged in development. He argues that human thought and cultural identity emerge through processes of interaction, negotiation, and translation between cultures, rather than within fixed or autonomous systems (Bhabha, 1994). In his theory of cultural hybridity, Bhabha emphasizes the existence of a “third space” where cultures intersect, exchange ideas, and generate new, hybrid meanings. W. Welsch critiques traditional understandings of culture as bounded, homogeneous, or territorially confined, asserting that in an age shaped by globalization, transnational migration, and technological interconnectedness, cultures increasingly transcend national and ethnic boundaries (Welsch, 1999; Dervin, 2016). The concept of “transculturality” on this dynamic perspective, describing a state in which cultural elements no longer function as opposites or isolated entities but instead intersect, blend, and integrate. Unlike *interculturality*, which typically focuses on dialogue between distinct and relatively stable cultural identities, *transculturality* emphasizes the creation of new, fluid cultural formations and practices (Vauclair et al., 2014). It reflects the contemporary reality of intensified cultural contact, in which traditional boundaries dissolve and identities become processes of ongoing negotiation and adaptation (Benjamin, 2025).

Transculturality not only creates space for existing cultures to interact, but also contributes to the formation of a new, unique cultural space (Guilherme & Dietz, 2015). This new space is characterised by specific visual, social and cultural parameters in which elements of different cultures can combine and intersect, creating hybrid forms. Transculturality does not simply stand above existing cultures but it actively ‘absorbs’ elements of these cultures, making it dynamic and changeable. This is an important difference from intercultural interaction, which most often involves the preservation of separate identities and respect for differences.

Globalisation has significantly influenced the interaction between cultures and civilisations, intensifying their interconnection and giving rise to new forms of cultural relationships. This process involves not only the exchange of material and spiritual values, but also the emergence of a new global cultural landscape in which diverse elements merge to form distinct transnational cultural expressions. In their edited volume “Many Globalizations: Cultural Diversity in the Contemporary World” (2002), P. Berger and S. P. Huntington discuss four key processes of cultural globalisation (Berger & Huntington, 2002). These processes, while sharing certain characteristics, are described as operating independently, each following its own internal logic rather than forming a unified system.

Berger and Huntington highlight common features that underpin these globalising processes: they largely originate in the West (particularly the United States), rely heavily

on English as a lingua franca, reflect an internationalist orientation, and demonstrate a degree of autonomy that allows them to develop without direct external interference. Additionally, the researchers identify several defining characteristics of cultural globalisation. These include the erosion of local and regional distinctiveness, resulting in a multiplicity of cultural forms and practices; the weakening of national and ethnic boundaries, leading to increased polyethnicity and openness to diverse cultural influences; and the decline of traditional values in favour of universal human ideals. As a result, cultural differences in their conventional sense begin to diminish. However, Berger and Huntington emphasize that cultural analysis must still account for enduring aspects of mentality and identity. While shaped by global forces, these elements do not vanish but instead adapt to new socio-cultural realities. More recent research has confirmed this dynamic character of cultural change. Yeganeh (2024) demonstrates that globalization interacts with modernization and demographic pressures, fostering hybrid and transnational cultural expressions. This highlights that cultural globalization does not follow a linear trajectory but is shaped by complex and sometimes contradictory forces.

M. Epstein introduces the notion of “transculture” as a symbolic and experiential space that transcends traditional national, ethnic, racial, and gender boundaries (Epstein, 2009). *Transculture* exists at the intersection of different cultures, where various cultural elements mix and assimilate. This process occurs when individuals cross cultural boundaries, adapt to them, and thus create new, hybrid cultural forms. Epstein emphasises the importance of such interactions, where traditional identities cease to be rigid and fixed, opening up space for the dynamic and multi-layered development of cultural identity in the context of globalisation.

M. Tlostanova critically engaged with Epstein’s concept of *transculture*, particularly from a decolonial perspective. In contrast to Epstein’s more universalist and abstract notion of *transculture*, Tlostanova advocates for a conception of “transculturation” that is deeply rooted in the lived experiences of individuals navigating multiple cultural affiliations, especially in postcolonial and post-Soviet contexts (Tlostanova, 2019). Originally introduced by F. Ortiz (1940/English translation 1995), *transculturation* provides a more process-oriented lens for understanding cultural change (Ortiz, 1995; Dagnino, 2015). It emphasizes the asymmetrical, negotiated, and often contested nature of cultural encounters, where individuals and communities experience both cultural loss (deculturation) and the acquisition of new cultural elements (neoculturation). According to Tlostanova, transculturation is a form of border thinking, characterized by hybrid and multiple identities that emerge from the negotiation of cultural differences (Tlostanova, 2012). These identities are formed through what she describes as cultural polyphony, where different cultural voices interact without merging into a singular, dominant narrative. From this perspective, the transcultural process is seen as a necessary step in the transition from traditional, bounded cultures to a new mode of being-in-the-world that enables individuals to exist simultaneously within multiple cultural contexts.

Discussion

Summarising the key findings of the study, several significant points can be highlighted regarding changes and adaptations of cultural terms in educational practice. First, as the study shows, terms such as *multiculturalism*, *interculturality*, and *transculturality* are not only dynamic but also evolve in response to global changes and social transformations. These concepts evolve by adapting to new challenges such as globalisation, migration and cultural transformations. This confirms the flexibility of terminology and the need to revise it in response to changes in society, which is an important aspect for further discussion. Comparing the results of this study with previous work in this field, it can be noted that the changes identified in these terms not only reflect their development but also create certain difficulties in interpretation. For example, the boundaries between *interculturality* and *transculturality* are becoming increasingly blurred. In this regard, it is important to consider the context in which these terms are used, as their meaning may vary depending on cultural and social conditions.

Interpreting the results of the study, it can be argued that globalization has a significant impact on the development of cultural concepts and terms. Migration and transnational interactions contribute to the emergence of hybrid cultural forms, which requires a rethinking of old concepts and their adaptation to new conditions. This is confirmed by observations in numerous recent studies that point to a growing interest in the concepts of transnationality, hybridity, and intercultural dynamics (Yeganeh, 2024; Benjamin, 2025). It is important to note that such changes require educators and researchers to be flexible in their use of these concepts and to revise them in the context of educational practices.

One of the limitations of the study is the complexity of accurately interpreting terms, especially when it comes to their application in different fields of knowledge. As the results have shown, differences in approaches to these terms in the context of different disciplines can make their interpretation in educational practice difficult. However, despite this, it is necessary to clearly distinguish between concepts in order to avoid confusion and ensure clarity in cultural literacy education. This remains important for further research and curriculum development, highlighting the need to adapt educational methods to contemporary conditions. In the future, research should continue on changes in cultural terminology and their impact on education. In particular, it would be useful to study how specific educational systems adapt these terms and what practical results this entails.

Conclusions

Based on the analysis of the concepts of multiculturalism, interculturality, and transculturality, several important conclusions can be drawn regarding their appropriate use within cultural studies. First, although these concepts are related, each possesses distinct characteristics. *Multiculturalism* emphasizes the recognition and preservation of cultural

differences. *Interculturality* highlights the importance of communication and exchange between cultures, creating a space for mutual understanding while maintaining cultural identities. *Transculturality*, by contrast, refers to the fusion and interweaving of cultural elements, moving beyond traditional boundaries and generating hybrid cultural forms.

Secondly, a clear and accurate understanding of these terms is essential for their effective application in academic and educational contexts. Each approach has its own theoretical foundations and practical implications, which necessitate precise definitions and consistent usage in research and practice. Applying these concepts appropriately requires attention to their differences to avoid ambiguity and conceptual confusion.

The analysis reveals that interpretations of these terms often vary depending on disciplinary and cultural contexts. Although interrelated, these concepts are not synonymous. Their use must be purpose-driven, whether the goal is to preserve cultural distinctiveness, foster intercultural dialogue, or facilitate the emergence of new hybrid identities. The effective use of multiculturalism, interculturality, and transculturality in education and scholarship requires a nuanced understanding of their individual characteristics and roles in global and intercultural processes. Such clarity will enhance the precision, coherence, and relevance of educational and academic discourse on cultural diversity.

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TEACHERS' BELIEFS ON NATURE AS A VALUE IN EARLY CHILDHOOD EDUCATION

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ABSTRACT

Values are fundamental in early childhood education, underpinning children's social, emotional, and moral growth. Teachers' beliefs play a role in how values are conveyed through educational practices, influencing curriculum development, daily interactions, and teaching methods. In Latvia, educational policy emphasizes the inclusion of ten core values, one of which is nature. This study aims to examine early childhood teachers' beliefs on nature as an educational value.

A cross-sectional qualitative study was conducted using semi-structured interviews with 24 teachers from municipal and private early childhood education settings. Participants provided informed consent prior to participation, and online interviews were guided by a structured set of relevant questions. Data were analysed using an inductive thematic analysis framework.

The study highlighted teachers' recognition of the significant benefits nature offers for children's development in early childhood education. Teachers reported that outdoor experiences promote physical development by improving coordination, strength, endurance, and immunity. Emotional benefits included reduced stress, greater emotional stability, and increased independence. Cognitive gains were observed through enhanced concentration, curiosity, and problem-solving abilities. Additionally, nature was seen as promoting social skills such as empathy, cooperation, and reduced conflicts among children.

The findings confirm that nature is perceived as a fundamental value contributing to children's holistic development. However, to fully integrate nature into educational practices, it is essential to explore factors that influence its implementation. Addressing these factors may strengthen the promotion of nature as a core value in early childhood education.

Keywords: *early childhood education, early childhood teacher, nature, teachers' beliefs, value*

Introduction

Values are fundamental principles that influence human behavior, decision-making, and interpersonal relationships (Schwartz, 1992). In early childhood education, the integration of values plays a central role in promoting children's social, emotional, and civic development (Gökçe, 2021; Lovat, 2024). Simultaneously, introducing values

at an early stage helps establish the foundations for responsible, democratic, and socially cohesive societies (Cornelio et al., 2019; Ülavere & Tammik, 2017). Values are commonly understood as stable principles that serve as guidelines for action and as standards for evaluating what is considered good or desirable behavior (Halstead & Taylor, 2000). They influence how individuals relate to their environment, contribute to social cohesion, and guide ethical decision-making (Schwartz, 1992).

Within theoretical frameworks, values are often categorized into terminal and instrumental types. Terminal values represent the desirable end states individuals strive to achieve, such as happiness, freedom, and a sustainable society. Instrumental values, by contrast, are preferred modes of behavior that serve as means to achieve these end goals, including qualities like honesty, responsibility, and environmental stewardship (Rokeach, 1973). Emerging research also highlights the growing relevance of values associated with sustainability, collective responsibility, and ecological awareness in modern educational contexts (Osberg et al., 2024; Tuulik et al., 2016).

Values in early childhood education

Embedding values within education is essential as it promotes social peace, civic engagement, and the development of democratic principles (Cornelio et al., 2019; Gökçe, 2021). Shared societal values serve as the foundation for ethical conduct and collective progress (Kachur, 2021). Furthermore, legal and institutional frameworks reinforce the internalization of these values by embedding them within curricula and promoting societal sustainability (Kachur, 2021).

The early childhood period is particularly critical for value formation. During these formative years, children internalize fundamental principles through lived experiences, social interaction, and observing modeled behavior (Skriver Jensen & Broström, 2018; Ülavere & Tammik, 2017). Play-based and competence-oriented education approaches are particularly effective, as they promote the development of transversal skills linked to social and civic values (Oliņa et al., 2018). Learning environments that promote collaboration, respect for diversity, and shared responsibility contribute significantly to the development of children's ethical reasoning and a sense of social justice (Skriver Jensen & Broström, 2018).

Given the importance of early childhood in shaping values, the role of educators becomes especially significant. Teachers play a central role in the transmission and modeling of values within early childhood education (Gökçe, 2021). Their personal beliefs and attitudes shape the overall learning environment and influence how values are integrated into daily educational practices (Shirani & Mohamadi, 2021). Through informal interactions, emotional support, and the creation of inclusive classroom communities, teachers model fundamental values such as fairness, empathy, respect, and responsibility (Skriver Jensen & Broström, 2018; Ülavere & Tammik, 2017).

Additionally, teachers' selection of educational strategies, learning activities, and communication methods reflect their underlying value systems (Gökçe, 2021). Since children learn values both through explicit teaching and through everyday

interactions, understanding teachers' beliefs about values is essential for promoting effective value-based education.

Nature as a value in early childhood education

In recent years, particular attention has been given to the role of nature as a value in early childhood education. The natural environment is increasingly recognized not only as a setting for play but also as an essential component of children's holistic development. In educational contexts, "nature" and "natural environments" relate to spaces contrasting with urbanized and human-made environments, including forests, rivers, wetlands, and cultivated gardens (Picanço et al., 2024). Nature can be perceived simultaneously as an economic resource, an ecological system, and an aesthetic experience that promotes emotional connections (Udoudom, 2021).

Research highlights the positive impacts of engagement with nature on children's physical development, emotional well-being, and social competencies (Barrable & Booth, 2020). Nature-based play activities, such as free exploration and outdoor learning, promote motor competence, shape healthy living habits, and enhance cognitive flexibility and cooperative behaviours (Fermin et al., 2024; Johnstone et al., 2022).

Furthermore, direct interaction with natural elements stimulates curiosity, creativity, resilience, and problem-solving skills, which are considered essential competencies for promoting sustainable development (Dominguez Contreras & Krasny, 2022; Wojciehowski & Ernst, 2018). Nature provides rich sensory and experiential learning opportunities, allowing children to explore biodiversity, understand ecological cycles, and perceive the interconnectedness of living systems (Jansson & Lerstrup, 2021; Prins et al., 2022).

Several educational approaches integrate nature as a central educational resource. Forest pedagogy and Montessori education explicitly incorporate the natural environment into children's daily experiences, promoting empathy, responsibility, and environmental literacy (Barrable & Booth, 2020; Ozgen, 2023). These approaches recognize nature not merely as a setting but as an active agent in the learning process.

In addition to structured methods, outdoor learning activities such as gardening, recycling, and exploratory walks further reinforce respect for the environment and foster sustainable behaviors (Dovbnia & Otchenko, 2022; Poje et al., 2024). Educational initiatives that actively involve children in ecosystem protection cultivate a sense of ecological responsibility from an early age (Dominguez Contreras & Krasny, 2022).

Creative activities like storytelling, songs, and thematic play centered on natural elements also support children's understanding of biodiversity and environmental preservation (Heggen et al., 2019; King, 2024). Through these activities, young children develop an appreciation for the complexity and beauty of the natural world.

Establishing early emotional bonds with nature has lasting effects. Research shows that positive experiences with nature during the early years significantly influence individuals' environmental attitudes and behaviors later in life (Cerino, 2023; Chawla, 2020; Sobko et al., 2018). Joy experienced in natural settings, empathy towards living organisms, a sense of environmental responsibility, and an understanding of natural processes

are identified as key elements for fostering lifelong environmental stewardship (Chawla, 2020; Li et al., 2024).

In this broader context, it is important to examine how nature is conceptualized and valued within national education systems. Latvia has developed a comprehensive regulatory framework to support the integration of values within its education system (Ministru kabinets, 2016; Saeima, 1998), with a strong emphasis on fostering the moral development of learners in line with the values articulated in *Satversme*, the Latvian Constitution. Key legislative documents (Ministru kabinets, 2016) identify specific core values that education must promote, aiming to cultivate informed perspectives, responsible attitudes, and principled action among learners. These core values include life, human dignity, freedom, family, marriage, work, nature, culture, the Latvian language, and the State of Latvia.

Despite the formal recognition of nature as an essential educational value, there is limited empirical research examining how early childhood teachers in Latvia perceive and promote nature within their professional practice. Addressing this gap, the present study aims to investigate early childhood teachers' beliefs about nature as a value, with a particular focus on their perceptions of the developmental benefits for children when nature is emphasized in educational activities.

Methodology

This study forms part of a larger research project examining the actualization of values in the professional practice of early childhood teachers. Ethical approval for the research was granted by the Research Ethics Committee of Riga Technical University (Decision No. 04000-10.2.3-e/6, dated 10 March 2025).

A qualitative cross-sectional study was conducted involving teachers implementing early childhood education curricula in municipal and private educational institutions. Participants were required to have a minimum of one year of teaching experience in early childhood education and to be recommended by an educational institution administrator. Teachers who specialized in specific subjects (e.g., music or physical education) were excluded due to the specialized nature of their roles and the fact that they do not work full-time within early childhood education units. A total of 24 early childhood teachers participated in the study; all were female, aged between 25 and 74 years ($M = 45.75$, $SD = 11.58$). Teaching experience varied, with 20.8% of participants having 1–5 years of experience and 33.3% having more than 20 years. All regions of Latvia were represented, with the majority (45.8%) working in Riga, the capital city.

Data collection occurred between January and February 2025. Potential participants were identified by contacting educational institution administrators via email and telephone. Upon receiving administrators' recommendations, prospective participants were provided with detailed information outlining the purpose of the study, the voluntary nature of participation, confidentiality assurances, and key interview topics. Participants were asked to complete an online sociodemographic questionnaire, collecting information on gender, age, education level, and teaching experience in early childhood

education, while simultaneously providing informed consent. To ensure anonymity while enabling data management, participants generated a personal code composed of four characters, which was used to link their demographic and interview data without revealing personal identities.

Semi-structured interviews were conducted to investigate teachers' beliefs regarding nature as a value in early childhood education. An interview guide developed by researchers structured the conversations. Interviews were conducted online via Zoom, lasting between 30 minutes and one hour, depending on the participant's responses and engagement. Interviews were recorded with participant permission and subsequently transcribed using Tilde Transcribe, a transcription software developed for processing Latvian-language texts.

Data were analysed using inductive thematic analysis, following the six-phase method established by Braun and Clarke (2006). While the overall thematic scope was informed by the research aim, the primary codes and subthemes emerged inductively from the interview material. The analysis proceeded through the following steps: (1) familiarization with the data, by repeated reading of the transcripts; (2) generating initial codes, where meaningful data segments were systematically labelled; (3) searching for subthemes, by organizing codes into potential subthemes reflecting shared meanings; (4) reviewing themes, ensuring internal coherence and distinction between themes; (5) defining and naming themes, to refine thematic boundaries and identify subthemes; and (6) producing the final report, by integrating data excerpts to support interpretation.

The coding process was implemented independently by both researchers to enhance scientific rigor. Triangulation of researcher perspectives helped resolve discrepancies and achieve a shared interpretation of the data.

Results

Exploring teachers' beliefs, thematic analysis specifically addressed the benefits of promoting nature as a value in early childhood education environments. To answer the research question "What are the benefits of promoting nature in early childhood settings?", teachers were asked to reflect on their perceptions of nature's developmental impact on children. Thematic analysis resulted in 58 text units, which were grouped into 14 primary codes and organized under four overarching subthemes: (1) nature's impact on physical development, (2) emotional and psychological well-being, (3) cognitive and learning skills, and (4) social skills and cooperation.

Teachers widely recognized that nature, when integrated meaningfully into daily early childhood education experiences, contributes to children's holistic development. They emphasized nature's importance not just as a context for play, but as a value-laden educational agent that fosters responsibility, sensitivity, and personal growth. One respondent explained that nature "is not just somewhere we go, it is part of how we teach children to be humans who notice, care, and act." These beliefs reflect the view that nature, as a value, encompasses physical experiences, emotional understanding, and social responsibility.

Teachers most frequently referred to nature's role in supporting physical development. Observations included improved balance, coordination, strength, and resilience. Daily movement in outdoor environments was seen as beneficial for gross motor skills and immune function. One teacher explained, "Children who spend a lot of time outdoors in all weathers are sick less often and are more alert." Others highlighted the value of unstructured movement: "Natural movement activities like running, climbing, or jumping over puddles let children test their physical abilities in ways we cannot replicate indoors." The use of natural materials such as stones, sticks, pinecones was also seen as enriching fine motor skills and imagination simultaneously.

In addition to physical growth, teachers emphasized nature's emotional and psychological benefits, particularly its calming and restorative effects. Nature was viewed as a space where children could express emotions freely, experience joy, and develop confidence. As one participant put it, "In nature, children create games from natural materials, invent new stories and use their imagination much more than indoors." Several noted that being outdoors helped children develop greater emotional stability and self-regulation, especially those with behavioral or attention difficulties. Others observed that the natural environment promotes independence and initiative: "You don't need to tell them what to do, if the space is open, children find what excites them, and you see a new confidence emerging."

Teachers also strongly emphasized the cognitive and learning value of nature. Many described how outdoor settings encourage exploration, curiosity, and critical thinking. Through open-ended play and sensory experiences, children are encouraged to observe, question, and draw conclusions. One participant shared, "Exploring nature develops the ability to think independently and find solutions to unexpected situations." Activities such as investigating puddles, observing seasonal changes, or sorting leaves and seeds were seen as foundational for scientific reasoning. Several teachers highlighted how nature provides an integrative learning context: "We connect language, math, and science with what we see outdoors. Children learn without even realizing they're learning." In one example, children used natural pigments from rose hips and yarrow to create colors and compared results: "They see how nature changes and they remember more when they see it in real life."

The final theme focused on social skills and cooperation, where nature was viewed as a setting that encourages empathy, sharing, and reduced conflict. Outdoor environments, teachers explained, offer space and variety, allowing children to self-regulate and collaborate more easily. "Children are less likely to argue and conflict outdoors because they have more space and choice of activities." Some described how contact with nature teaches responsibility: "When they help feed the birds or water the plants, they understand that their actions matter." Others noted how outdoor experiences fostered deeper connections among children: "Being outside together builds trust. You can see friendships forming in the way they cooperate with the leaves, or build shelters, or share tools."

Teachers also reflected on the moral and ethical implications of emphasizing nature as a value. Nature was not only seen as promoting personal development but also as fostering respect and stewardship. Children were frequently involved in recycling activities,

litter collection, and wildlife observation. “We teach them that every action has a consequence: if they throw something on the ground, they see birds picking it up.” This active engagement was framed as cultivating long-term environmental responsibility. Teachers thus positioned nature not simply as a learning resource, but as a relational space that fosters social and ecological consciousness from an early age.

In summary, the teachers in this study perceived nature not only as beneficial to children’s development but as essential to value education in early childhood. The text units analyzed revealed a consistent belief that nature enhances children’s well-being, cognitive growth, and social relationships while promoting environmental awareness and ethical responsibility. These insights underscore the importance of recognizing and supporting nature as a core educational value that aligns closely with the goals of holistic, democratic, and sustainability-oriented early childhood education.

Discussion

This study examined early childhood teachers’ beliefs about the benefits of promoting nature as a value. Teachers emphasized that nature has a key role in diverse areas of children’s development. The findings support previous research while offering deeper insights into teachers’ practical experiences.

Natural environments were widely recognized by early childhood teachers as essential for children’s physical development. Outdoor spaces inherently encourage unstructured physical activities such as climbing, running, and balancing, i.e., movements that are often limited in indoor settings. These gross motor activities foster muscle strength, coordination, and endurance while also promoting immune system development and physical resilience. Several teachers highlighted that natural environments with uneven terrain and organic play structures stimulate a broader range of physical skills. Their observations align with previous studies indicating that nature-based activities support motor competence through varied physical challenges (Raje & Ojha, 2022). Teachers also noted that children who regularly play outside tend to regulate their energy better and display more balanced activity-rest cycles. In addition, research has shown that outdoor activity significantly increases overall physical activity levels and contributes to healthier growth and reduced risk of obesity (Zhang et al., 2023).

Teachers consistently described nature as a powerful regulator of children’s emotional states, noting that outdoor environments help children relax, express themselves more freely, and show fewer behavioral outbursts. Natural settings were seen as emotionally stabilizing, offering children a safe space for stress relief and self-regulation. Several educators observed that children who engage with nature regularly tend to be happier, more independent, and less reactive to minor frustrations. They also noted that emotionally sensitive or socially withdrawn children often became more expressive and confident in outdoor contexts. These observations are supported by Goh et al. (2023), who found that exposure to natural scenery, especially when combined with human-animal interaction, enhances affective well-being by increasing positive emotions and reducing negative

ones. Similarly, Sella et al. (2023) concluded that forest school settings foster creativity, improved behavior, and psychological resilience, underscoring nature's essential role in nurturing emotional stability and healthy development in early childhood.

Teachers emphasized that natural environments significantly enhance children's cognitive development by fostering attention, curiosity, and problem-solving. Outdoor settings offer open-ended stimuli such as textures, sounds, and living organisms that support exploration and inquiry-based learning. Educators observed that children in nature display heightened focus, verbal expression, and initiative, which are key to developing early scientific thinking and language skills. These observations are supported by Kamal and Gabr (2023), who highlighted how flexible play in nature strengthens problem-solving and cognitive flexibility. Jiang and Hussain (2023) further noted that activities such as gardening or hiking promote critical thinking and adaptability through experiential learning. Additionally, Prins et al. (2024) found that natural environments stimulate language production, as children use observation and interaction to ask questions and share ideas. Overall, nature was seen not only as a play space but also as a dynamic context for cognitive growth and deeper understanding.

Teachers described natural environments as rich settings for fostering children's interpersonal and cooperative skills. Compared to structured indoor settings, outdoor spaces offer freedom of movement and open-ended resources that naturally encourage collaboration and reduce conflict. Educators noted that children frequently engage in group activities such as building shelters, caring for animals, or exploring together, which require negotiation, turn-taking, and mutual problem-solving. These shared experiences were viewed as critical for developing empathy, patience, and respect for others. Alme and Reime (2021) also highlighted that nature-based learning enhances participation and shared responsibility among young children. Similarly, Somadayo et al. (2022) emphasized that interactive experiences in nature support emotional bonding and communication skills. Teachers observed that nature-based tasks gave children a sense of belonging and responsibility, reinforcing their understanding of interdependence. Through these encounters, children not only strengthen social competence but also internalize ecological and ethical values central to early development.

Several limitations of the study should be acknowledged. First, early childhood teachers from rural areas, who often have daily access to diverse natural environments surrounding their educational institutions, were not represented in the sample. Their absence may have limited the range of perspectives on how proximity to nature shapes the integration of nature-based values in educational practice. Second, the relatively small sample size, while sufficient for qualitative inquiry, restricts the generalizability of the findings. Although thematic saturation was largely achieved, involving a larger and more geographically diverse group of respondents could have enriched the dataset and revealed further nuances or divergent experiences. Third, the study relied exclusively on self-reported perceptions collected through interviews. This method may be influenced by social desirability bias, particularly given the increasing societal and institutional emphasis on sustainability and ecological values. Fourth, the sample consisted exclusively

of female teachers. While this reflects the gendered reality of the early childhood education profession in Latvia, the absence of male voices leaves unexplored how gendered perspectives may shape the interpretation and transmission of nature as a value. Finally, the study focused on beliefs and perceived practices rather than direct observation of educational settings. Future research incorporating observational or mixed-methods approaches would offer deeper insights into how nature-related values are enacted in everyday educational activities.

Conclusions

The study provides valuable insights into early childhood teachers' beliefs and attitudes toward nature as a value to be integrated into early childhood education. Teachers highly appreciate the role of nature and recognize that children's understanding of nature as a value develops through direct experiences in natural environments. Emphasizing nature as a core value positively influences children's physical, emotional, and social development by enhancing their health, self-confidence, and cooperation skills.

Future research should further examine teachers' needs and identify effective pathways for strengthening value-based education in early childhood settings, with a particular emphasis on nature. It is also important to address the potential challenges and barriers to actualizing nature as a value in early childhood educational practice.

AUTHOR NOTE

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INTEGRATING COMPUTATIONAL THINKING CONCEPTS INTO WEB-BASED COLLABORATIVE ENGLISH AS A FOREIGN LANGUAGE WRITING

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ABSTRACT

This qualitative study explores the integration of Computational Thinking (CT) concepts in web-based collaborative writing (CW) within English as a Foreign Language (EFL) instruction. It investigates how CT concepts, including decomposition, pattern recognition, abstraction, and algorithmic thinking, enhance teaching strategies and foster learner engagement in digital writing environments. Data collection involved a workshop with EFL teachers ($N = 7$) on applying CT concepts in web-based CW, followed by a focus group interview and reflective journal entries documenting their teaching practices. The findings suggest that incorporating CT principles into CW tasks enables students to break down complex writing processes, identify linguistic patterns, and systematically structure their contributions. Teachers observed notable improvements in students' coherence, clarity, and critical thinking, as well as enhanced collaboration through digital platforms. However, they also highlighted challenges such as limited access to user-friendly tools and the need for further professional development in web-based foreign language writing pedagogy. This study provides valuable insights into interdisciplinary EFL instruction by demonstrating how CT principles can enrich CW practices. By fostering structured, reflective, and technology-enhanced learning environments, CT integration equips students with essential 21st-century skills for language education. Additionally, the findings contribute to discussions on teacher professionalism and education for the future, highlighting the need for educators to develop digital competencies and adapt to evolving pedagogical landscapes.

Keywords: *Computational Thinking; Collaborative Writing; EFL Instruction; Digital Literacy; Teacher Professional Development*

Introduction

In recent years, technology-enhanced language learning has brought new opportunities to foreign language instruction, particularly through web-based collaborative writing (CW). This approach enables learners to co-construct texts in digital environments, facilitating real time interaction, peer feedback and collaborative revision processes that

contribute to both linguistic development and critical thinking (Pardede, 2024; Selcuk & Daniela, 2023; Selcuk, et al., 2019; Storch, 2019). At the same time, Computational Thinking (CT), originally conceptualised within computer science, has emerged as an essential twenty-first century competence with potential applications across multiple educational domains, including language education (UNESCO, 2021; Wing, 2006). CT principles, such as *decomposition*, *pattern recognition*, *abstraction* and *algorithmic thinking*, offer structured cognitive frameworks that can support the complex processes involved in language learning and writing (Gu et al., 2025; Peng et al., 2023).

Although both CW and CT have been widely discussed for their individual pedagogical merits, limited empirical research exists on how these two approaches may be integrated to mutually enhance writing instruction, particularly within the context of secondary English as a Foreign Language (EFL) classrooms. As highlighted by Wu et al. (2024) and Yu et al. (2024), much of the current research on CT in language education focuses on individual learners, while studies on web-based CW largely examine collaborative outcomes without incorporating explicit CT strategies (Jeong, 2016; Li, 2023). Despite growing research on both CT and CW in language education, empirical studies examining their combined implementation in collaborative EFL writing remain scarce, particularly at the secondary school level.

Addressing this gap, the present study investigates how CT concepts can be integrated into web-based CW tasks within EFL instruction. By exploring the experiences of secondary school EFL teachers who applied CT-informed CW activities in their classrooms, this research aims to contribute to the emerging discussion on interdisciplinary approaches that combine cognitive, linguistic and digital competencies in language education.

Literature Review

In recent years, technology-enhanced learning (TEL) has played a growing role in reshaping pedagogical practices across disciplines, including language education (Daniela et al., 2018). Sustainable higher education requires flexible, digital, and student-centred teaching approaches, making the integration of CT into EFL instruction both timely and relevant. To provide a foundation for this study, the following review examines relevant literature on web-based CW in EFL contexts, the role of CT in language education, and their potential integration.

Web-Based Collaborative Writing in EFL Contexts

Web-based CW has become an increasingly popular pedagogical approach in EFL instruction due to its capacity to foster learner interaction, peer support and shared authorship through digital platforms such as Google Docs and wikis (Storch, 2019). These tools enable students to co-construct texts in real time, offering opportunities for mutual feedback, negotiation of meaning and collaborative problem solving. Empirical studies have consistently demonstrated the positive outcomes of web-based CW for improving writing performance, learner autonomy and motivation.

For example, Jeong (2016) reported that Korean EFL students using Google Docs exhibited enhanced communication, autonomous participation and dynamic peer collaboration, while Li (2023) found that Chinese EFL learners involved in online collaborative writing demonstrated improved writing performance, motivation and self-efficacy. These studies underscore the value of CW in creating learner-centred, interactive writing environments that promote both linguistic and socio-cognitive development. Furthermore, Pardede (2024) and Zhang and Chen (2022) emphasised the role of CW in enhancing syntactic complexity, text accuracy and language fluency, particularly when peer-mediated support structures are embedded within writing activities.

Computational Thinking in Language Education

Computational Thinking (CT), initially proposed by Wing (2006), refers to a set of problem-solving skills that involve decomposing complex tasks, identifying patterns, abstracting key information and applying algorithmic thinking. While CT originated within computer science, its relevance has expanded across disciplines as an essential twenty-first century competence (UNESCO, 2021). In language education, CT offers a structured cognitive framework that can support the planning, organisation and revision processes inherent to writing tasks.

Several recent studies have explored the application of CT in foreign language contexts. Yu et al. (2024) conducted a systematic review demonstrating that CT-oriented strategies can enhance grammar learning, text coherence and higher-order thinking in language learners. Similarly, Wu et al. (2024) implemented CT-based writing instruction that taught students to approach writing tasks like debugging code, resulting in improvements in both writing quality and critical thinking. Černočová and Selcuk (2022) further illustrated the growing awareness of CT's cross-disciplinary applicability, as future language teachers increasingly recognise its relevance to instructional design.

Integrating Computational Thinking with Web-Based Collaborative Writing

Although both CT and collaborative writing offer substantial pedagogical benefits independently, research on their combined integration remains underdeveloped. Most existing CT studies focus on individual learners' problem solving or linguistic accuracy (Wu et al., 2024; Tang & Ma, 2024), while studies on web-based primarily examine collaborative processes without incorporating CT-informed strategies (Li, 2023; Jeong, 2016). This reveals a significant research gap, as the structured cognitive scaffolding offered by CT may complement the collaborative dynamics of writing to enhance both writing outcomes and learner engagement.

Embedding CT into CW could allow students to approach writing tasks more systematically, dividing writing stages into subtasks (decomposition), focusing on main ideas (abstraction), recognising recurring issues (pattern recognition) and employing structured revision routines (algorithmic thinking). Table 1 illustrates how these CT principles align with different stages of the collaborative writing process in EFL instruction.

Table 1 Conceptual model of CT integration into the web-based collaborative writing process

Writing Process Stage	CT Concept Applied	Description
Planning	Decomposition	Breaking the writing task into subcomponents (e.g., introduction, body, conclusion, subtopics)
Idea Development	Abstraction	Focusing on main arguments, removing irrelevant ideas, identifying key messages
Drafting	Algorithmic Thinking	Following systematic steps for writing: brainstorm → outline → draft
Peer Review	Pattern Recognition	Identifying recurring errors or weaknesses during peer feedback (e.g., word repetition, grammar issues)
Revision	Algorithmic Thinking	Applying structured revision routines to improve clarity, coherence, and correctness

Yet, there is little empirical evidence that examines how such integration unfolds in authentic classroom settings, particularly at the secondary school level. The present study seeks to address this gap by investigating how EFL teachers implement CT-informed CW activities and how students engage with these integrated instructional practices.

To address this gap, the present study is guided by the following aim and research questions:

Research Aim

To explore how Computational Thinking (CT) concepts can be integrated into web-based collaborative writing (CW) in English as a Foreign Language (EFL) instruction and how this integration enhances teaching strategies and learner engagement in digital writing environments.

Research Questions

1. How can CT concepts (decomposition, pattern recognition, abstraction, and algorithmic thinking) be applied to web-based collaborative writing in EFL instruction?
2. What are the perceived benefits of integrating CT concepts into EFL collaborative writing in terms of student learning outcomes (e.g., coherence, clarity, critical thinking, and collaboration)?

The Study

This qualitative case study explored how seven Turkish high school EFL teachers integrated CT into web-based CW instruction. Seven teachers participated in the study, including four females and three males, with a mean age of 33.1 years, ranging from

twenty-five to forty-one. Participants were selected using purposive sampling based on their expressed interest in innovative pedagogical practices and voluntary participation in professional development (Creswell & Poth, 2018). All participants were employed at private high schools operating at ISCED Level 3, corresponding to upper secondary education (UNESCO Institute for Statistics, 2012), and were located in Istanbul and Izmir, Turkiye. The teachers had between five and fifteen years of professional experience, with a mean of 9.4 years.

Research Context

The study was situated within a broader capacity-building initiative aimed at enhancing digital pedagogy and promoting 21st-century skills in Turkish secondary education. The participating teachers voluntarily enrolled in a professional development initiative designed to explore CT integration into subject-specific instruction. The focus on CW aligned with national priorities encouraging student-centred, technology-supported learning environments, particularly in light of post-pandemic educational adjustments.

Workshop Design

The study commenced with a ninety-minute online interactive workshop that introduced participants to foundational CT concepts, including *decomposition*, *pattern recognition*, *abstraction*, and *algorithmic thinking*. The workshop also demonstrated how these concepts could be applied in the context of web-based CW. Teachers engaged in practical tasks such as breaking down an essay question into subcomponents, identifying linguistic patterns within texts, and co-writing a short article using a cloud-based platform (Google Docs). These activities enabled teachers to experience CT from a learner's perspective and reflect on its pedagogical relevance in EFL writing instruction.

Implementation Phase

Following the workshop, each teacher integrated CT-informed CW activities into their classroom practice over the course of three to four sessions. These classroom activities encouraged students to apply CT principles by decomposing writing tasks into smaller segments, recognising stylistic or structural patterns, abstracting key arguments for clarity, and designing structured peer-review routines. The intention was to support the development of students' critical thinking, writing fluency, and digital collaboration skills.

Ethical Considerations

The study adhered to institutional and international ethical standards for educational research. Prior to participation, all teachers were fully informed about the study's objectives, procedures, and their right to withdraw at any time without consequence.

Written informed consent was obtained from each participant. To ensure confidentiality, all data were anonymised and identifying information was removed during transcription. Pseudonyms were used in all reporting. Participation was entirely voluntary, and all reflective material was treated as confidential and used exclusively for research purposes.

Data Collection

Two primary data sources were used to explore the teachers' experiences:

- **Focus Group Interview:** A semi-structured online focus group discussion was conducted in Turkish and lasted approximately two hours. This allowed participants to express their ideas and experiences more freely. The discussion was recorded, transcribed verbatim, and subsequently translated into English. The focus group explored teachers' understanding of CT, their reflections on classroom implementation, perceived challenges and benefits, and their comfort with using web-based collaborative tools.
- **Reflective Journals:** Each teacher maintained a reflective journal throughout the implementation phase and for one week after the workshop. These journals captured daily reflections, insights into student reactions and engagement, notes on classroom practices, and evolving attitudes towards the integration of CT in EFL writing. Several participants also included informal feedback from students who engaged with the CT-based tasks.

Data Analysis

All qualitative data, including focus group interview transcript and journal entries, were analysed using thematic analysis as outlined by Braun and Clarke (2006). The researchers familiarised themselves with the data through repeated readings and employed an inductive coding approach, generating codes directly from the content rather than using a pre-existing framework. Coding was conducted independently by both researchers and then compared to ensure consistency. Codes were refined through discussion and organised into broader themes that captured commonalities across participants' experiences.

To enhance the trustworthiness of the findings, a process of member checking was undertaken. A summary of the emergent themes was shared with participants, who confirmed that the analysis accurately reflected their perspectives. All names reported in the findings were replaced with pseudonyms to protect participants' identities.

The final coding scheme consisted of three overarching themes, each encompassing several subthemes that emerged inductively from the data. These themes represent shared patterns across participants' experiences of integrating CT into collaborative EFL writing. The coding structure was developed through iterative comparison and discussion, ensuring that each subtheme was conceptually distinct while contributing to the broader thematic category. A summary of the thematic structure is provided in Table 2.

Table 2 Emergent Themes and Subthemes from the Integration of Computational Thinking into Web-Based Collaborative Writing

Theme	Subtheme	Description
Enhanced Coherence and Organisation	Decomposition as planning strategy	Students divided writing tasks into logical components (e.g., introduction, body, conclusion), which supported structural clarity and task distribution.
	Algorithmic thinking in sequencing	Teachers guided students to follow a step-by-step process (e.g., brainstorm → draft → revise), which helped maintain focus and coherence in group writing.
Clarity of Expression through Critical Thinking	Abstraction for idea refinement	Students learned to identify main ideas and eliminate irrelevant content, resulting in more concise and purpose-driven writing.
	Pattern recognition in peer review	Collaborative editing practices involved identifying recurring issues (e.g., word repetition, grammar errors), leading to more accurate and varied language use.
Increased Student Engagement and Motivation	Engagement through problem-solving	Writing tasks were perceived as intellectually stimulating; students approached them like solving a puzzle, which increased active participation.
	Digital tools enhancing collaboration	Tools such as Google Docs facilitated real-time interaction and accountability, which heightened motivation and involvement among students.
	Initial implementation challenges	Some students experienced confusion when introduced to CT concepts, requiring scaffolding and instructional support from teachers.

Findings

Thematic analysis (Braun & Clarke, 2006) of the focus group interview transcript and reflective journals revealed three interrelated themes that illustrate how the integration of CT principles influenced CW practices in EFL classrooms. These themes are: (1) Enhanced Coherence and Organisation, (2) Clarity of Expression through Critical Thinking, and (3) Increased Student Engagement and Motivation. Each theme is supported by teacher narratives that offer insight into pedagogical processes, learner behaviour, and classroom dynamics.

Enhanced Coherence and Organisation

The first theme concerns the impact of CT strategies on the structure and organisation of student writing. All participating teachers observed that the use of *decomposition* and *algorithmic thinking* contributed significantly to the structural quality of students'

texts. By breaking writing tasks into manageable components and applying a sequential writing process, students produced more logically organised compositions. As Teacher 3 explained in the focus group discussion: *“We divided the essay into introduction, body, conclusion, and even split the body among three subtopics. This made the final essay much more coherent, because each part was well-developed and connected.”* Reflective journals reinforced this perspective, particularly regarding the benefits of stepwise planning: *“I noticed that when my students followed a clear sequence – brainstorm, outline, draft, peer review, revise – their writing stayed on track. The algorithmic approach to writing kept everyone focused on their part, then we merged the parts smoothly.”* (Teacher 4) Teachers attributed these improvements in coherence to the scaffolding provided by CT strategies, which facilitated clearer task distribution and reduced redundancy across group members’ contributions.

Clarity of Expression through Critical Thinking

The second theme highlights how CT principles supported greater clarity and critical engagement in student writing. Teachers reported that *abstraction* and *pattern recognition* helped students refine their ideas and language. *Abstraction* was particularly useful in encouraging students to identify key messages and remove extraneous content. Teacher 6 reflected on this shift in focus: *“Encouraging my students to identify the main idea of each paragraph made their writing more concise and clear. They started removing sentences that didn’t support the main point.”* *Pattern recognition* also emerged as a valuable tool during peer revision: *“After the group identified a pattern – for example, overusing the same transition word – they made edits to vary their language. It was a great exercise in noticing and improving their language use.”* (Teacher 7) These reflections suggest that the CT-informed writing process enhanced students’ ability to evaluate, revise, and improve their work with greater precision. Teachers noted an increase in students’ metacognitive awareness and their willingness to approach writing as an iterative, reflective task.

Increased Student Engagement and Motivation

The final theme centres on the affective dimension of the writing process, particularly students’ motivation and participation. Teachers consistently reported high levels of engagement during CT-enhanced CW activities. The combination of problem-solving, group dynamics, and digital tools appeared to transform writing into an active and collaborative endeavour. As Teacher 2 noted: *“I have never seen my students so involved in a writing exercise. They were excitedly debating the best way to structure our essay, almost like they were solving a mystery together.”* (Teacher 2) Digital tools such as Google Docs also played a role in maintaining interest: *“Using Google Docs with these strategies turned writing into an interactive game. Each student had a role, and they loved it – even my typically quiet students were contributing actively.”* (Teacher 4)

While the overall response was positive, some teachers acknowledged initial implementation challenges. A few students struggled with unfamiliar CT terminology or required extra support in the early stages of task planning: *“Some students didn’t*

understand at first what decomposition meant. I had to give examples, like planning a recipe step by step, to help them get it." (Teacher 1) Despite these early obstacles, the integration of CT concepts was widely seen as a catalyst for increased learner autonomy, confidence, and collaborative involvement.

Taken together, the themes suggest that CT principles enhanced not only the cognitive and structural dimensions of students' writing but also their emotional and social engagement with the learning process. Teachers reported that CT provided a practical, replicable framework for planning, evaluating, and refining writing tasks in group settings. Although some initial challenges were noted, the overall integration of CT into CW pedagogy was experienced as highly beneficial by both students and teachers.

Discussion

This study explored how the integration of CT strategies into collaborative EFL writing influenced classroom practice. The research results reveal crucial understanding regarding both elements.

The teachers from this study used *decomposition* and *pattern recognition* along with *abstraction* and *algorithmic thinking* to implement CT concepts in their classroom writing instruction. The writing process involved *decomposition*, enabling students to divide tasks into introduction and body and conclusion sections while *algorithmic thinking* directed them to follow systematic steps from brainstorming to drafting to peer review and revision. The CT strategies provided a step-by-step method that enabled students to maintain both coherence and organisation during CW activities. Through *abstraction* students concentrated on essential ideas in their writing to discard unimportant details which enhanced both clarity and precision. Peer feedback processes received assistance from *pattern recognition* because students worked together to detect repeating problems with vocabulary repetition and structural errors which they applied specific revision methods to. The research results confirm previous studies which show CT enhances structured thinking as well as writing organisation according to Wu et al. (2024) and Yu et al. (2024).

The educational benefits of combining CT with EFL collaborative writing practices became apparent to teachers through multiple observed advantages. The teaching approach generated better writing outputs together with enhanced critical thinking abilities and stronger collaborative behaviours from students. The writing process revealed enhanced metacognitive skills in students because they started analysing their writing decisions. The problem-solving collaborative nature of CT tasks increased student engagement along with motivation levels. Students developed a dynamic puzzle-like perspective on writing which maintained their interest throughout the process. The findings align with previous research which demonstrated that web-based CW enhances learner autonomy while boosting active engagement (Li, 2023; Jeong, 2016). The implementation of CT required teachers to provide students with explicit modelling along with scaffolding support because students needed time to learn CT concepts during the initial

implementation phases. The successful implementation of CT in EFL writing instruction requires a phased introduction with teacher assistance according to these findings.

Despite these positive outcomes, several challenges were identified. Some students initially struggled to understand CT concepts, requiring clear examples and gradual instruction. Teachers also reported time limitations and curriculum pressures, highlighting the need for institutional support and flexible planning. These constraints suggest that effective integration of CT requires not only pedagogical adaptation but also strategic planning at the institutional level.

Importantly, the experience also supported teacher development. Participants reported an increased awareness of how to design structured, collaborative, and digitally mediated writing activities. This indicates that CT has the potential to promote reflective teaching practices alongside student learning.

Conclusion

The research adds new insights to the developing body of knowledge concerning CT integration within EFL classroom instruction, specifically in web-based CW tasks. The research findings, based on the experiences of Turkish secondary school teachers, show that CT strengthens both cognitive writing processes and collaborative activities. Through *decomposition* and *algorithmic thinking*, students learn to structure their complex writing assignments, while *abstraction* and *pattern recognition* enhance their ability to produce clear and coherent texts. The interactive problem-solving nature of computational thinking fosters greater student engagement, self-directed learning, and increased confidence.

Educators who wish to implement CT in web-based CW should consider several practical recommendations. Teachers should introduce *decomposition* through explicit instruction during the planning process by helping students divide writing tasks into distinct, manageable components. The application of *algorithmic thinking* involves guiding students through step-by-step writing cycles that begin with drafting, proceed to reviewing, and conclude with revising. Teachers should incorporate abstraction activities to help students identify core ideas while eliminating superfluous material, and employ pattern recognition tasks within peer-review sessions to sharpen students' language awareness. It is essential that teachers provide continuous scaffolding and practical examples to introduce CT concepts gradually.

While this research yields important findings, additional studies are needed to investigate computational thinking-based teaching methods through extended classroom interventions and experimental designs conducted over multiple academic years. Future research should examine how CT supports language learners in developing reading comprehension, speaking and listening skills, and how emerging technologies, such as AI-based writing tools, may facilitate CT integration.

The integration of CT into web-based CW represents an effective approach to develop students' language skills and digital competence in EFL classrooms. Educational

institutions should adopt interdisciplinary approaches that combine language learning with CT in order to equip students with the skills necessary to navigate increasingly complex, technology-driven futures that will emerge from ongoing digital and societal transformations.

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INVESTIGATING TEACHERS' VIEWS ON THEIR COMMUNICATION WITH STUDENTS

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ABSTRACT

Teachers' views on their communication with students have always been an important issue. Communication with students with deviant behaviour is a special case. Nowadays the number of such students is still rising. Therefore, teachers have to adapt to the situation and look for the ways how to work with such students. This research involved the schools where the number of students with deviant behaviour is high, and was the part of the project "The Hard Nut of Communication" to stress that the communication with such students is difficult and needs much efforts. The project was carried out at Riga Educational and Informational Methodological Centre (RIIMC) and involved three schools – Riga Reinholds Shmelings Secondary School, Riga Secondary School No 15, and Riga Austrumu Primary School. The project tried to explore how improving teacher–student–teacher relationships affects their academic performance, social relationships, and future development. The project was implemented from October 2023 until April 2024. Fifteen teachers were part of the project. The present paper presents the data collected during the project. The research results show that teachers' communication and cooperation with their students is of paramount importance in the teaching–learning process and can have a positive impact on students' learning outcomes, behaviour, inclusion, and school belonging, as well as lead to a healthier lifestyle and improve students' quality of life. Although the number of teachers participating in the project is small (15), the general trends show similar results. However, further studies will provide more reliable results.

Keywords: *behaviour, belonging to school, communication (teachers–students–students), inclusion, quality of life, teaching–learning process*

Introduction

Communication between teachers and students has always been an issue to be investigated. The present paper reflects the results of the project "The Hard Nut of Communication" focusing on the communication between teachers and students with deviant social behaviour. Riga Reinholds Shmelings Secondary School, Riga Secondary School No 15, and Riga Austrumu Primary School that participated in the project had rather

many students whose social behaviour could be characterised as negative, whose learning results were low, who were not included in the class, and who did not belong to their school. The project included several activities with the aim to improve teachers' communication competence with their students. Out of school lecturers were invited to share their knowledge and experience with teachers. The first lecturer was Mg. theol. Rudīte Losāne. She has been working as a chaplain at Iļģuciems women prison. There were three activities guided by Rudīte Losāne. At her first lecture she introduced with the specifics of prison environment and subculture. Then she spoke about the resocialization programme "Mirjama" founded and led by her. The last activity guided by Rudīte Losāne was watching the film "Iļģuciems sisters" ("Iļģuciema māšas"). The director of the film is Elita Kļaviņa. Teachers watched the film and participated in the discussion. Apart from that the project also introduced with the lecture given by Dr. psych. Airisa Šteinberga who shared her knowledge and experience in work with students focusing on the ones with deviant behaviour. Moreover, the project also included two lectures given by the teachers who participated in the project. At the beginning of the project the teachers introduced with their view on communication problems with students and shared expectations from the project, but at the end they discussed gained lessons and future prospects. The author of the research Antra Roskoša was the coordinator of the project.

The main aim of this particular research was to identify the most effective ways for teachers to communicate. This can positively impact students' learning outcomes, inclusion, sense of belonging, and a positive school climate as well as an overall better quality of life.

The main research questions were the following: 1. Can teachers help students improve their learning, inclusion, and school belonging? 2. What are the most important ways of communicating that can positively impact students and be crucial for their well-being at school and a healthier lifestyle?

The research presents notable scientific value by addressing an emerging educational challenge to effective teacher–student communication. Nowadays, the number of students having deviant social behaviour is still rising, and teachers have to improve their competence to work with such students productively.

Given the ongoing rise in such behavioural issues, the research contributes to the broader academic discourse by examining the factors favouring productive teachers' communication with students, thus fostering effective, inclusive, and respectful learning environments.

Enhancing Productive Teacher–Student Communication

Communication and collaboration are the two pillars of pedagogy that make a difference in the process of teaching as well as the climate of the classroom. Experts of Oxford University (2024, p. 39) emphasise that communication, collaboration, and mediation are key transition skills, identifying communication as the top priority: "Being able to

communicate in different social situations is, of course, one of the main goals of Communicative Language Teaching (CLT) at all levels of proficiency.” As Nielsen and Shunk maintain in their publication (2002, p. 42): “One of the most important elements of the learning process is the communication between the teacher and the students. It is through communication that teachers convey their knowledge to students, facilitating its retention in memory. Learning is more effective when there is two-way communication” (translated from Latvian by I. Kočote).

An important aspect is the students’ skill to cooperate and work in a team that includes students’ ability to form and develop their own opinions, respect and tolerate each other. A teacher is the one who can foster trust in students and create a positive pedagogical environment, which serves as a foundation for increasing both intrinsic and extrinsic motivation. The former relies on the person’s inner ability to improve the situation because of the pleasure of doing something or knowing how important it is to mitigate the drawbacks. Extrinsic motivation refers to performing something as a mandatory assignment (Sansone & Harackiewicz, 2000, p. 445). Both types of motivation work better with positive feedback and a favourable classroom environment and should be supported by the teacher.

Motivation is also based on a sense of belonging, the need to be accepted by the family, school, and community, as stated by Špona (2018, pp. 16–17), the successful outcome of which depends on the collaboration of all parties. Not only communication between a teacher and students but also communication among students themselves should be encouraged, as the nature of helping behaviour within peer-directed small groups may be most effective for learning, especially for students who have difficulty with the material (Webba & Mastergeorgeb, 2003, p. 73). This approach stimulates students’ interest in the subject and is helpful when a timid student is embarrassed to ask a question to the teacher. Moreover, a peer student may explain the complicated matter in layman’s language. This, in turn, improves the student’s confidence and boosts the learning morale.

Research conducted in Mexican (Sylvia Rojas-Drummond) and British (Neil Mercer) schools supports the view that children will especially benefit from a classroom experience in which there is a careful integration of teacher-led discourse and peer-group interaction (Rojas-Drummond & Mercer, 2003, p. 110). This research, funded by the British Council, involved primary classrooms, however, the outcomes might be applied to later stages of student development. The authors state: “Education is seen as taking place through dialogue, with the interactions between students and teachers reflecting the historical development, cultural values and social practices of the societies and communities in which educational institutions exist” (ibid., p. 100).

Amadi and Kufre Paul (2017, p. 1102) at the beginning of their research pose a question, why some teachers, despite their perceived knowledge of the subject matter and probably the methods of instruction, fail to achieve their set objectives. The paper emphasises that communication is “not the mere talking and hearing that happens in every normal classroom” (ibid.). The authors consider the psychological and emotional communication that predisposes the learners to effectual learning and provide

ten ways a teacher ensures effective communication in the classroom: showing sincere enthusiasm or humour, building a friendship, making learners focus, ensuring trust, creating an atmosphere of interdependence, probe into intellectual aptitude at the onset of a class, make learners feel challenged, be a master of a subject matter, understand different learning styles and be generic, be accommodating and tolerate students' mistakes. The research reveals that students have a strong positive relationship between their level of communication and their academic achievement (*ibid.*, p. 1107).

Group work is the basis for Communicative Language Teaching as Blatchford et al. (2003) researched various aspects of it, especially the social pedagogy of group work. The scholars believe that the distinction between a teacher and students may blur in the future as information becomes increasingly accessible and instantly available. However, learning extends beyond acquiring information. The classroom of the future, along with its evolving and relevant pedagogy, may focus on co-learners, that is, students learning from and with each other, collaboratively making sense of the information available to everyone (*ibid.*, p. 169).

This notion that students may contribute to the learning process is ubiquitous, as Gillies (2019) in her research highlights the key role talk plays in the construction of knowledge, understanding, and learning. She signifies the role of teachers in fostering student interaction, which is also supported by the current research. Špona and Čamane (2009, p. 17) also emphasise the importance of collaboration and sharing, stating that: “in the mental process of the mind and the emotional expression of attitudes, there is a shift from the internal to the external activity of mind, manifesting through practical means such as speech, action, and behaviour. Students of different ages have different interests and learning intensities, but the most important thing for them is to understand and practice the need to share what they have learned with their peers. This process, known as exteriorisation, involves explaining, understanding, demonstrating, and collaboratively modelling their learning. Simultaneously, in the process of interiorisation, they reinforce what has been learnt” (translated by I. Kočote).

Nowadays, with the development of information and communication technology tools mutual communication often takes place in the virtual world through texting and messaging, which is another way of communicating, especially for those students who have difficulty with face-to-face communication, it provides an opportunity to express themselves. On the other hand, the lack of experience in public speaking narrows their options in the labour market. The COVID pandemic restricted students to their rooms, as distance education was in place; therefore, live, face-to-face communication posed some difficulty. Being lecturers at Riga Technical University, the authors of the research can share some experience concerning communication; namely, students give preference to written communication with tutors. Therefore face-to-face communication is not a priority anymore.

It is also important to stress that a transition skill at a basic level can be understood as a skill that allows students to effectively manage any period of change, which could also apply to a change from adolescence to adulthood, a period that is never easy for a teenager. Teachers who manage the process of communication in the classroom can help

their students succeed in this process. Teachers share their knowledge and experience to enrich their students' knowledge and experience. Teachers can also introduce the trends of a healthy lifestyle and a better life quality.

A healthy lifestyle may improve the life quality of students who have low learning results, deviant behaviour, and problems of inclusion and belonging to school. Therefore, the popularization of a healthy lifestyle among students was also researched (see question 11). Concerning the factor of contact with others, qualitative research interviews conducted by a team of German scientists from Heidelberg University in Mannheim (Diehl, et al., 2018, p. 6) revealed that playing sports involved a group experience and a shared sense of achievement. Further, students indicated that sports were a source of fun and pleasure and could provide a feeling of self-affirmation. This could be significant for students' inclusion at school.

Thus, the research aimed to identify the most effective communication methods for teachers that could positively impact students' learning outcomes, behaviour, sense of inclusion, belonging, and a positive school climate. A healthy lifestyle and a better quality of life are also of high importance. The research methodology and results are analysed in more detail in the following sections.

Methodology

There were several steps to conduct the research. The research started with the development of the questionnaire. Based on the theoretical literature (Engere et al., 2014, p. 46–61; 2003, p. 34–38, 38–44); Īlena (2019, p. 42–43); Plaude (2001, p. 161–167); Cepelis et al., (2001, p. 23–31); Brahuna, Gorkija (2016, p. 31–35) original questionnaire was developed by the author of the research Antra Roskoša. Fifteen teachers participated in the research. They were the teachers whose everyday work involves communication with students with deviant behaviour and who have the necessary experience to comment this topic. They were surveyed at the beginning and end of the project. The teachers were asked to evaluate the way they communicate with their students. The data were then compared to determine if the project had an impact on teachers' communication with their students. There were 12 statements included in the questionnaire. They can be divided into three groups: 1) communication that can solve conflicts, 2) communication that can help students include into the school and promote their sense of belonging, and 3) communication that can help students lead a healthy lifestyle to improve the quality of life. Teachers were asked to rate the items on a three-point scale, 1 – agree, 2 – neither agree nor disagree, 3 – disagree. The data obtained were processed using MS Excel.

As mentioned before the project more focused on teachers' communication with students with deviant behaviour. Therefore, the research was also specific and concentrated on the same problem – communication difficulties between teachers and their students. Therefore, the base of the research was the schools and teachers who work with students with such communication hardship.

The results of the research follow in the next paragraph.

Research Results

Different aspects can define communication. This research analysed teachers' communication and intended to find out clues to help students succeed and show higher learning and behaviour results both in school and in life.

The first criterion to test how teachers communicate with their students deals with the solution of conflicts and is addressed by Questions 1–4. At first, the teachers had to assess if they helped their students trust and communicate with each other (see Figure 1). The data prove that there is no change in teachers' way of communication when we compare their performance at the beginning of the project (in October 2023) and at the end of it (in April 2024). It means the teachers were already aware of the need to help their students improve communication in the group and promote their trust in each other.

When analysing the teachers' attitude to the statement "I help my students resolve conflicts – control emotions, be objective", there is a slight difference in their answers comparing the data in October 2023 and April 2024 (see Figure 2). Fourteen teachers agreed with this statement in October and slightly fewer (12 teachers) in April. Apart from that, there was only one teacher at the beginning of the project but three – at the end of it, who neither agreed nor disagreed with this statement. This means that the teachers may have become more critical when evaluating their way of communicating. It is a positive tendency because critical thinking and self-evaluation can be the key factors to improve the competence of teachers' communication.

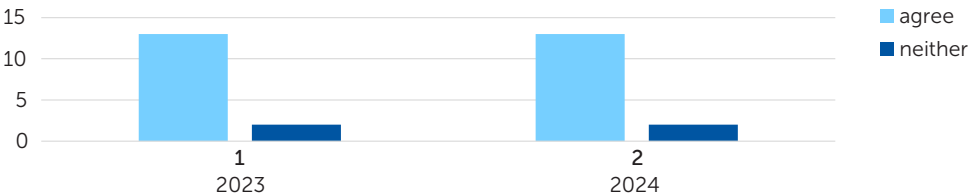


Figure 1 Responses to Question 1 "I help my students to trust and communicate with each other (2023–2024)"

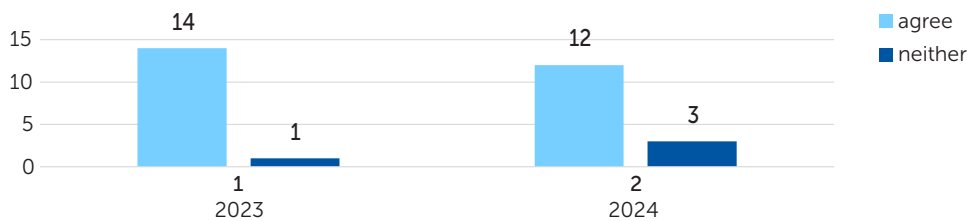


Figure 2 Responses to Question 2 "I help my students to solve conflicts - control emotions, be objective (2023–2024)"

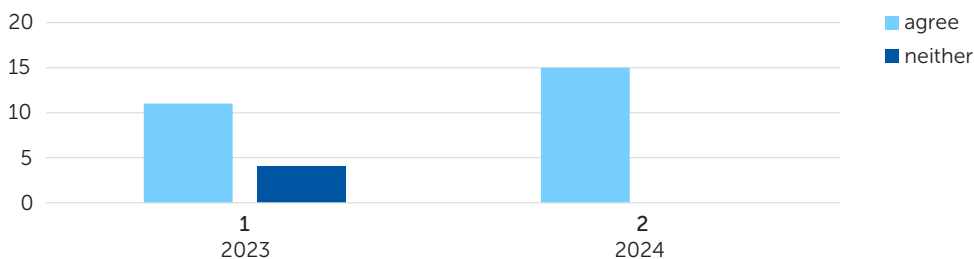


Figure 3 Responses to Question 3 “I help my students to assess their own and other students’ behaviour (2023–2024)”

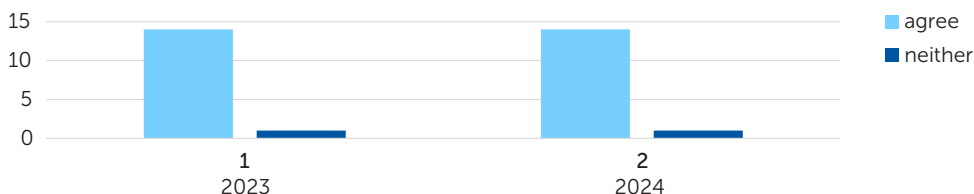


Figure 4 Responses to Question 4 “I help my students to get positive emotions and get rid of negative ones – fear from a teacher, classmates, marks (2023–2024)”

Another aspect, which dealt with the competence of teachers’ communication to resolve conflicts, characterised the ability of teachers to help students evaluate their own and other students’ behaviour. The data show progress in teachers’ attitudes. If, in October 2023, 11 teachers agreed with this statement, then in April 2024 there were already 15 teachers who agreed with the statement (see Figure 3). Furthermore, at the beginning of the project, there were four teachers who neither agreed nor disagreed with this statement, but at the end of the project, there were no teachers with this attitude. This proves the importance of the project in promoting possible change in teachers’ attitudes. Teachers are more aware of the need to evaluate and analyse the behaviour – both their own and that of their students.

One more statement that examined teachers’ communication competence revealed that teachers helped their students obtain positive emotions and get rid of negative emotions – fear of a teacher, classmates, and grades. According to the data, the project did not lead to any progress in teachers’ attitudes toward this competence. Before the project and upon its completion, teachers’ responses remained the same – 14 teachers agreed with the statement, and only one teacher neither agreed nor disagreed with it (see Figure 4). Thus, almost all teachers (14) already help their students manage and control their emotions. This means that the teachers’ competence to perform such communication, which can reduce conflicts in the group, can be characterised as high.

The second criterion (examined through Questions 5–9), which identified the teachers’ communication process with their students, characterised such communication that could help students be included in the school and promote their sense of belonging there.

Since students' sense of belonging to their school and group is closely related to respecting and tolerating each other, teachers needed to assess whether they were helping their students respect and tolerate each other. It is interesting to note that at the beginning of the project, all teachers (15) agreed with this statement, but at the end of the project 13 teachers gave a positive answer, and two teachers neither agreed nor disagreed with the statement (see Figure 5). This proves that teachers critically evaluate their communication competence, likely encouraged by the project.

Another statement that characterises teachers' communicative competence is assessed when teachers help their students develop their skills to cooperate and work in a team. It is important to emphasise that this skill is crucial to promote students' inclusion in school and their belonging there. The data show the importance of this particular communication competence of teachers. There are significant changes that can be brought about by the project. If at the beginning of the project, there were only six teachers who agreed with the statement, then at the end of the project, there were already 10 teachers who gave a positive answer. There were also more teachers (7) who neither agreed nor disagreed with the statement in October 2023, but there were fewer teachers (4) whose opinion was not so strong in April 2024. Few teachers (2) disagreed with the statement in October 2023 and only one in April 2024 (see Figure 6). The data demonstrate that after the project, the teachers consider the possibility of collaboration and teamwork more seriously. This can lead their students to a more successful inclusion into school and promote their sense of belonging there.

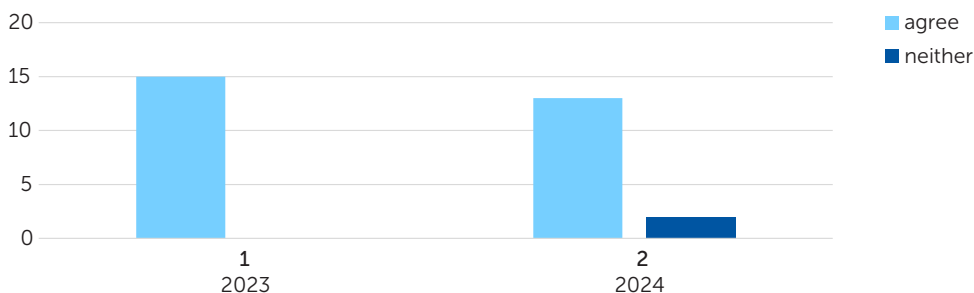


Figure 5 Responses to Question 5 "I help my students to respect and tolerate each other (2023–2024)"

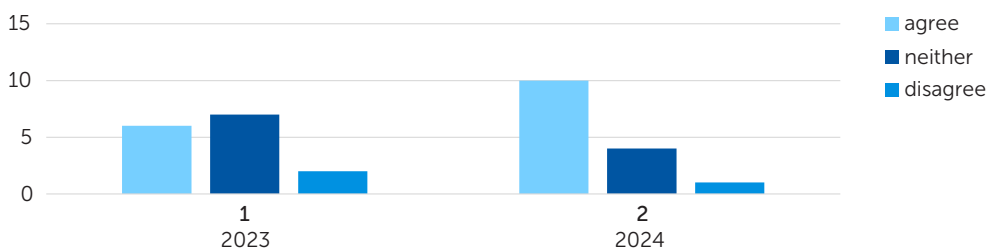


Figure 6 Responses to Question 6 "I help my students to develop their skill to cooperate and work in a team (2023–2024)"

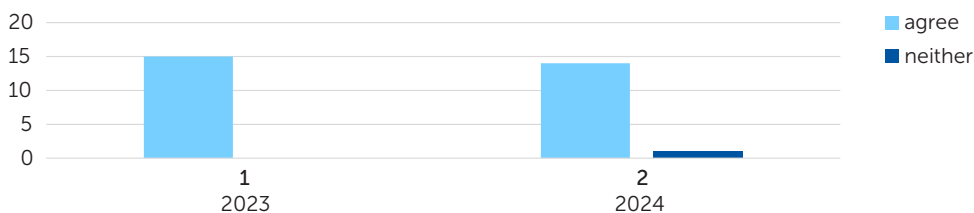


Figure 7 Responses to Question 7 “I help my students to develop their skill to form their own opinion and respect other ones”

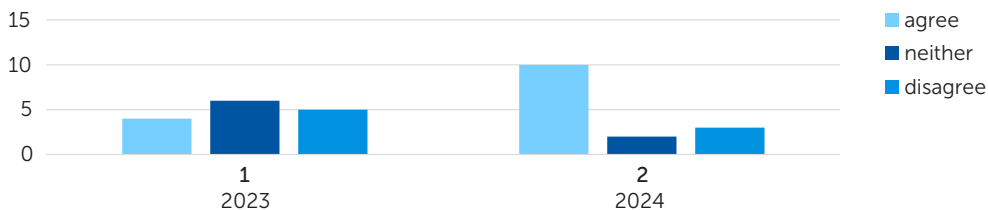


Figure 8 Responses to Question 8 “I try to diminish students’ tendency to avoid communication and inclusion in the class (2023–2024)”

In addition, another aspect that can promote students’ inclusion and school belonging is the competence of their teachers to develop students’ ability to form their own opinions and respect others. The data show that there are no significant changes in the responses of the teachers influenced by the project. Fifteen teachers agreed with the statement in October 2023, and 14 teachers agreed in April 2024. The number of teachers who did not have a strong opinion is almost none; only one teacher neither agreed nor disagreed with this statement in April 2024 (see Figure 7). Thus, the data demonstrate that almost all the teachers involved in the project consider the importance of students’ forming opinions and respecting each other’s opinions to be very high. Therefore, the environment of the schools participating in the project could be characterised as democratic and inclusive. Students’ opinions are very important.

Another aspect confirmed that the schools participating in the project had a democratic and inclusive environment. The teachers had to assess whether they had tried to reduce the tendency of students to avoid communication and inclusion in class. It is necessary to emphasise that the teachers’ evaluation of this particular aspect showed that most of the progress was probably made due to the project. There were only four teachers who agreed with this statement in October 2023. However, by April 2024, there were already ten teachers who gave a positive response. It should also be noted that there were more teachers (6), who neither agreed nor disagreed with the statement in October 2023. However, only two teachers did the same in April 2024. The number of teachers who disagreed with the statement was rather high compared to other statements. Five teachers disagreed at the beginning of the project, and three teachers at the end of it (see Figure 8). It could be concluded that after the project, teachers were possibly more concerned about the necessity to diminish students’ tendency to avoid communication and separation. Therefore, the project may also have an impact on students’ attitudes.

The last aspect revealing teachers' communication to promote students' inclusion and belonging to school dealt with the development of students' personality and talents. It is important to emphasise that the talents of students and the positive development of their personalities can be crucial to increase their self-esteem and value, thus helping them be included in school more successfully. The data do not show significant changes made by the project. There were 12 teachers in October 2023 and 13 teachers in April 2024 who agreed that they helped their students develop their personalities and talents. Only three teachers in October 2023 and two in April 2024 denied that fact (see Figure 9). It can be concluded that most of the teachers try to communicate with their students in a way that helps them grow and use their advantages.

The final criterion (evaluated through Questions 10–12) examining the way teachers communicate with their students dealt with the improvement of students' quality of life. It has already been mentioned that the schools that participated in the research had many students with deviant behaviour. Therefore, the teachers had to assess if they discussed with their students their negative behaviour – lying, aggression, attendance problems, drug addiction, etc. The data prove that the teachers are not aware of this kind of communication, and the project has possibly made a positive impact on this issue. There were eight teachers, who agreed with the statement in October 2023, and nine teachers, who did the same in April 2024. At the beginning of the project, there were two teachers who neither agreed nor disagreed with this statement, but at the end of the project, there were already five teachers, who did not have a strong opinion. Five teachers denied that way of communication in October 2023, and only one teacher did the same in April 2024 (see Figure 10). This means that teachers are possibly more concerned about the significance of discussing with their students the topics related to the quality of their lives.

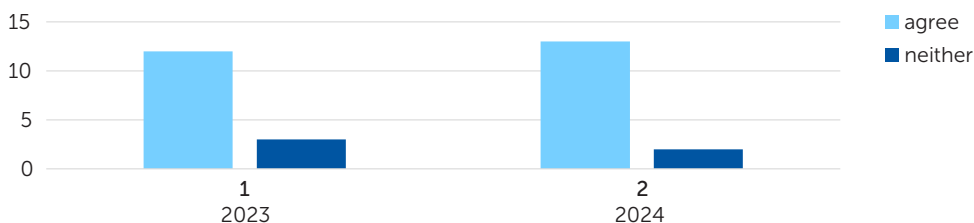


Figure 9 Responses to Question 9 "I help to develop my students' personality and talents (2023–2024)"



Figure 10 Responses to Question 10 "I discuss with my students their negative behaviour – lying, aggression, attendance problems, drug addiction, etc. (2023–2024)"

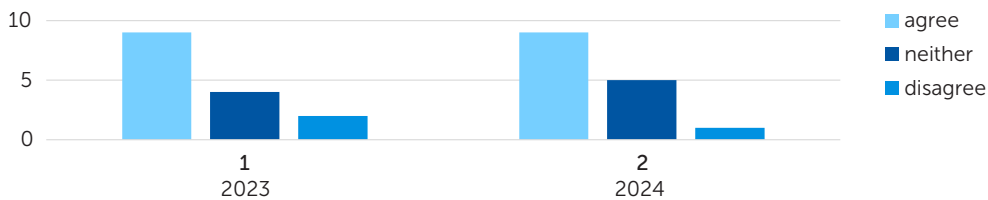


Figure 11 Responses to Question 11 “I try to popularize a healthy lifestyle to my students (2023–2024)”

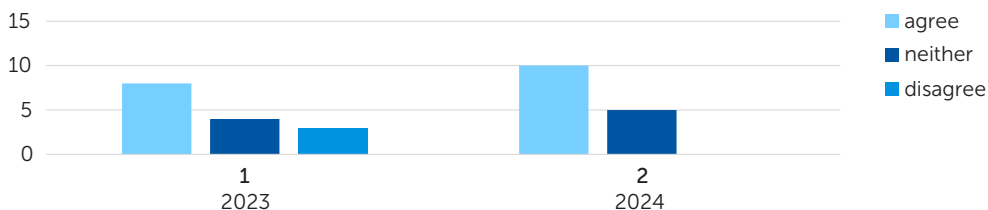


Figure 12 Responses to Question 12 “I try to discuss the impact of unhealthy lifestyle with my students (2023–2024)”

Teachers also had to evaluate if they tried to popularize a healthy lifestyle to their students. The data show that the problem with such a way of communication still exists. There were nine teachers, who agreed with this statement both in October 2023 and April 2024. However, the number of teachers who did not have a strong opinion was rather high – four teachers in October 2023 and five teachers in April neither agreed nor disagreed with the statement. The teachers who disagreed were not many – two teachers in October 2023 and one teacher in April 2024 (see Figure 11). It means that teachers should be more concerned about putting into practice such a way of communication.

The final statement assessed by the teachers dealt with communication when they tried to discuss with students the impact of an unhealthy lifestyle. The data show that the teachers are still rather unconcerned about the necessity to discuss such topics. Although eight teachers before the project and ten teachers after the project agreed with the following statement, the number of teachers who neither agreed nor disagreed was considerable, i.e., four teachers in October 2023 and five teachers in April 2024 (see Figure 12). The data also prove that the project may have positively affected teachers’ communication, such that three teachers disagreed with the statement before the project, and none disagreed after the project.

Assessing project results, it is possible to conclude that teachers and the way they communicate can help students enhance their learning, inclusion, and school belonging, while also encouraging improvements in their overall quality of life.

Discussion

Successful communication between teachers and students is a key factor which can significantly improve students' learning outcomes as well as their interaction with teachers and peers. As stated by Nielsen and Shunk (2002, p.42) "learning is more effective when there is two-way communication". It means that both parts of communication process – teachers and students should be active. If there is only one part which dominates, then the other part stays passive. Thus, the communication process lacks productivity.

Apart from the communication between teachers and students, another type of communication – communication among peers is also important. According to the Mexican and British researchers Sylvia Rojas Drummond and Neil Mercas "peer – group interaction is also of a high importance" (2003, p.110). If the communication among peers is successful, it can lead to inclusive and positive atmosphere in the classroom. It means it is necessary for teachers to create such atmosphere at the classroom which can encourage all students to be active and included.

Sports and a healthy way of living are especially important for the students with a deviant behaviour because it can improve not only students' life quality but also their communication with teachers and peers. As stated by Diehl "playing sports involves group experience and a shared sense of achievement" (Diehl, et al., 2018, p.6). It means sports can increase students' self –esteem and help them be an active part of communication.

Conclusions

The project showed a tendency that there might have been an impact on the way teachers communicate, which could lead to the improvement of their students' learning results and behaviour, helping them to include and fit into the school. The project may have long-term results because

- a vast majority of teachers are critical when assessing and analysing their way of communication to help students diminish conflicts in the group and promote their trust in each other;
- most of the teachers who participated in the project consider cooperation and teamwork seriously, trying to diminish students' tendency to avoid communication and separation. Teachers try to help their students grow, use their pluses, and express their opinions. These steps can promote a democratic, inclusive, and friendly atmosphere at school;
- most teachers are concerned about the significance of discussing with their students the topics related to a better quality of their lives. However, the problem with such a way of communication still exists.

Thus, the research results prove that teachers' communication and cooperation may help their students reach better results in learning and progress in their behaviour, thereby enhancing students' inclusion and belonging to school. Therefore, it can be asserted that the quality of students' lives has the potential to change for the better.

AUTHORS' NOTE

Dr. sc. admin. Antra Roskosa and Mg. philol. Inese Kocote are the members of RTU teaching staff. The interests of their research focus on teacher professionalism, education management, multicultural class management, intercultural communication, as well as the aspects of technical translation.

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THE FORMS OF SUPPORT PROVIDED BY THE MENTOR AND ANALYSIS OF THE UNDERLYING APPROACH: THE ISSUE OF CONTEXTUALISING ACADEMIC KNOWLEDGE IN THE PROFESSIONALIZATION PROCESS

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ABSTRACT

A number of studies carried out internationally on the process of contextualizing different types of academic knowledge through the use of embedded student practice systems revealed the difficulties pre-service teachers face in integrating academic knowledge into their teaching practice. The difficulties are particularly evident in the assessment of a child's educational achievement and progress. Thus, the mentor's support for the student teacher becomes an invaluable asset in the professionalization process.

The aim of the study is to reveal the forms of mentor support for the student teacher and the underlying approach to the mentor support in students integrating their academic knowledge into practical activities in the assessment of children's educational achievements and progress. The methods used include: analysis of scientific literature to reveal the theoretical assumptions of the study; observation and cross-interview method (Clot et al., 2000) to collect data on the mentor's support and its meaning, to identify the underlying approach to and the forms of the support; Theureau's (2006) action research technique to analyze the data. The research is based on a constructivist epistemological approach, which aims to highlight the meaning given to reality from the point of view of the actors (Fourez, 2008). The methodological basis for the analysis is Leclercq et al.'s (2014) support model complemented by elements of Paul's (2009) model. Based on the research findings, it can be argued that the form of support chosen by the mentor and the approach that underlies it are closely linked to the mentor's approach to the student's teaching practicum. The study found that mentor's support may be expressed in different ways, and the forms of support vary: a) dialogue-based support (in the form of counselling or guidance); b) speculative-approach-based support (in the form of coaching); c) normative-approach-based support (in the form of individual mentoring).

Keywords: *contextualizing academic knowledge, mentor support, professionalization, student teacher, teaching practicum*

Introduction

Today, the key role of mentoring in the process of professionalization is no longer a matter of debate. Mentoring manifests itself in providing support and helping the mentee to develop their professional skills. Mentoring is considered a very powerful professionalization tool (St-Jean & Mitrano-Méda, 2013) that can be applied in a wide range of support situations. The situation of our research interest is mentor's support to pre-service teachers in contextualizing their knowledge in practice. Numerous studies have been carried out internationally on the process of contextualizing different types of academic knowledge through the use of student practice frameworks, which revealed that pre-service teachers face difficulties in integrating academic knowledge into their teaching practices in primary and early childhood education settings (Monney et al., 2018; Monney, L'Hostie & Fontaine, 2018). The difficulties in transferring knowledge from the academic field to practice are particularly evident in the area of assessment of children's achievements and progress. Student teachers rely mainly on their experience as a former pupil or student, which may not be relevant (Moisan, 2010; Monney, L'Hostie & Fontaine, 2018), not taking into account the main purpose of assessment "*to meet the child's educational needs to the maximum of their potential and use the assessment results for improvement of the educational process*" (Balevičienė & Zablackė, 2022, p.1).

In Lithuania, a recent analysis of the assessment of children's educational achievement and progress at the national level showed that "*the area of the assessment of achievement and educational planning is one of the weakest areas of school performance, which asks for qualitative changes*" (Balevičienė & Zablackė, 2022, p.1). The aforementioned analysis highlighted the need for changes at the national, municipal, and school levels including teachers-supervisors of practicum.

Although in Lithuania there are enough subjects in the curricula of teacher education programmes at universities which include topics related to assessment of learning achievement and progress, there is also no shortage of open access information sources, scientific publications, conferences and seminars on this topic. However, the reality of educational institutions clearly shows the problem: both pre-service and in-service teachers have difficulties applying the official guidelines for assessment of children's learning achievement and progress, and the latest scientific research. Therefore, mentors' support for student teachers becomes an invaluable asset in the professionalization process.

Research shows that the assessment practices teachers use are the result of continuous "negotiation" affected by many factors including values, beliefs, attitudes, knowledge, experience, educational context, legal requirements, school culture (Pasquini & Morales Villabona, 2022; Timperley et al., 2007; Xu & Brown, 2016). Taking into account this complex and contextual "negotiation" which determines the assessment practices, the situational approach to assessment (Mottier Lopez, 2015; Pasquini & DeLuca, 2021) allows to understand the teachers' logics of assessment by questioning the decisions determining teachers' assessment practice and their approach to support as well as the choice of the form of support as a means of professionalization.

This leads to the main *problem question of the research*: what is the nature of and approach to the mentor's support for the student during a practicum in attempting to conceptualize the acquired academic knowledge in the assessment of the children's educational achievements and progress?

The *aim of the study* is to reveal the forms of mentor support for the student teacher and the underlying approach to the support in students integrating their academic knowledge into practical activities in the field of assessment of children's educational achievements and progress. The methods used in the present study include analysis of scientific literature to reveal the theoretical assumptions of the study; the observation and cross-interview methods used to collect qualitative research data; thematic analysis used to analyze the data collected during the observation process with the aim of identifying the main semantic units. The data collected through cross-interviews was analyzed using Theureau's (2006) action research technique and interpretations.

This study adopts a constructivist epistemological framework, emphasizing the subjective interpretation of reality as perceived by the participants (Fourez, 2008). The analytical approach is grounded in Leclercq et al.'s (2014) support model, further enriched by selected components of Paul's (2009) model.

Theoretical background to the study: the forms of support provided to the student teacher and dominant attitudes in the student placement situation

The support provided to the student teacher during the practicum is mainly defined as mentor's activity through which the student's experience and theoretical knowledge is actualized in order to help them clarify the actions performed and improve or modify the practical skills demonstrated (Paul, 2009; Portelance, 2010).

Leclercq et al.'s (2014) model of support was chosen as the methodological basis for the analysis because it allows highlighting trends in the empirical research. The analysis of the trends in the study was also based on Paul's (2009) model of support which justifies the variety of support forms. Linking the two models allows drawing conclusions about the most effective methods and forms used by the mentor to help the mentee mobilize, actualize and integrate their knowledge into a specific practical situation of assessing the child's learning achievements and progress.

According to Leclercq et al. (2014), the provision of specific support to a person may be based on one of the following approaches: *normative, speculative or dialogue-based approach*.

From the *normative approach perspective*, support refers to the transmission of the norms of the profession in order to help the person mobilize the profession-defining normative knowledge. The normative-approach-based mentoring was analyzed by Perronnet et al. (2023) in their research on the differences in the impact of mentoring depending on the mentees' social background demonstrating how perceptions and forms of mentoring vary according to the profile of young people, thus contributing to the legitimization and reproduction of social inequalities. From the normative perspective, in

the case of mentoring, the support provider is seen as an experienced teacher from whom the trainee should draw inspiration. These forms of support are the most rigorous and leave little room for reflection on the part of the mentee.

From the *speculative approach* perspective, the support provider encourages the trainee's commitment to action in order to plan their support (Leclercq et al., 2014). They implement the strategies which allow the trainee to become independent in their decision-making and try to give the impression that the trainee is in control of their own actions. The *speculative approach* envisages coaching as a form of support. Coaching is based on the trainee's professional needs to develop their potential and practical knowledge (Paul, 2002). The practicum supervisor is still in the position of an expert, but is aware that the trainee's professional identity is already manifesting itself and the trainee needs to develop their practical activity.

From the *dialogue-based approach* perspective, communication becomes the basis of the support process. The support provider (e.g., an experienced teacher) and the trainee (e.g., a student teacher) explain their attitudes towards the actions taken during the educational activity. They share their doubts, ask each other questions and challenge each other adopting the principle of the relationship of equals (Leclercq et al., 2014). Support is mainly provided in the form of counselling or guidance. It is a more flexible, egalitarian form of support describing precisely the professional relationship between the support provider and the protégé. In the educational institution, the mentor provides ongoing guidance helping the student teacher understand the tasks and objectives of the practicum, answering questions and solving problems, providing regular feedback on the student's work, pointing out the strengths and weaknesses, and giving advice on the improvement of skills and knowledge.

This means that depending on the perspective adopted, the support provided may take different forms of expression. Support can be tailored to meet specific needs of support providers (e.g., mentors) and support recipients (e.g. students), which allows for a high degree of flexibility of the methods applied (Mottier Lopez, 2017).

Irrespective of the form of support, there is always the question of its effectiveness. The assessment of the effectiveness is essential to ensure that the objectives are achieved and the support recipients can benefit from the services provided.

Methodology

The constructivist epistemological approach adopted in this pilot study emphasizes the meaning which the actors give to reality (Fourez, 2008). *The observation and cross-interview method* (Clot et al., 2000) were used to collect data on the mentor's support and its meaning, to identify the underlying approach to and the forms of support. The cross-interview is a research method where a few researchers carry out interviews with the same participants, but at a different time and under different conditions. This method allows the data to be collated and their reliability and consistency assessed (Clot et al., 2000). The cross-interview method is particularly suitable for analyzing and transforming

professional practice. This method allows the researcher to observe how and what the practicum supervisor and the student teacher say when discussing the assessment of children's achievement and progress (What do they say? How do they say it? What is the content of the feedback?). It helps clarify the chosen subjects of discussion. Such aspects are essential to fully understand the complexity of the support for trainees.

The advantages of the cross-interview are as follows: *enabling an in-depth analysis of professional performance* as this method allows distinguishing between past performance and actual performance to identify potential hindrances preventing performance improvement; *practice transformation* as collation of the research participant's actions with those of their colleagues, which promotes constructive professional debate leading to development or transformation of professional practice; *updating the performance analysis*, which allows to update the performance analysis by integrating the employee perspectives, thus determining a better understanding of performance and more tailored solutions; *health promotion in the work environment* as this method empowers employees to take control of their activities and environment contributing to their well-being and health at work. The cross-interview method is particularly useful in cases where it is necessary to understand and improve professional performance through collaboration and reflection, in other words, cross-interviewing serves the purpose of actor professionalization.

The cross-interview method starts with videoing an action or activity observed (in the case of this study – giving feedback to the student teacher), then reviewing the video with the main performer of the action (in the case of this study – the practicum supervisor), asking them to comment on their own actions (Clot et al., 2000). Watching the video material is like an encounter with oneself (Monney et al., 2018), which involves commenting on and verbalizing the activity. This method allows recreating the situation and provides access to the context, the dynamics of a particular activity and its interpretation. Thus, the meaning is given to the activity performed and videoed, when the actor analyzes their actions in the situation observed.

The cross-interview is used in research on human activity to document and better understand the actors' experiences and activities (Theureau, 2006). There are simple interviews and counter-interviews. The former is a confrontation of the actor with the traces of their activity and an invitation to explain their choices (Zinguinian & André, 2017). The latter allows for collaboration between the researcher and the actors in the analysis of the actors' activities (Theureau, 2006). In the present study, the counter-cross-interview method was applied.

The purposive sampling was used to form the research sample selecting participants who were able to produce insightful data. The research participants were pre-school mentor teachers ($n = 5$) with experience in supervising student teaching practicums and an interest in assessment of educational achievement and progress. The research was carried out twice in May and November 2023 when second and third year students of Klaipėdos valstybinė kolegija /HEI had their practicums. When selecting the research participants, different educational institutions of Klaipėda region were approached. The data on the research participants is provided in the table below (see Table 1).

Table 1 Data on the research participants

Participant code	The number of students supervised	Mentors' teaching experience (years)	Mentors' experience of supervising student practicums (years)
M1	3	10	8
M2	5	20	10
M3	1	15	7
M4	7	17	12
M5	4	11	6

Table 2 The periods of data collection

Period	Participants	Method
May 2023	Five mentors (supervisors of practicums)	Group discussion
May 2023	Five dyads (student teacher and mentor)	Observation I, videoing, initial analysis of observation
June 2023	Five mentors (supervisors of practicums)	Cross-interview I
November 2023	Five dyads (student teacher and mentor)	Observation II, videoing, initial analysis of observation
November 2023	Five mentors (supervisors of practicums)	Cross-interview II

All the participants were female with over ten years of teaching experience, and between six and twelve years of experience supervising student practicums, which shows considerable experience in both fields.

The data collection was carried out during the periods of practicums (see Table 2).

Having obtained the consent of the participants and students to participate in the study, the researchers started with a group discussion which took place on the premises of the educational institution in May 2023. All the mentors, who agreed to participate in the research, and the researchers were invited to the discussion. The purpose of the discussion was to discuss and explain the sequence of the study, set preliminary dates for the study stages, agree on the activities to be observed by the supervisors, and other organizational issues. The researchers again made sure the participants had not changed their minds and were still willing to participate.

During the observation periods (May and November), the mentors received a request from the researchers to discuss with their trainees the educational activities they had just carried out. The researchers clarified that the discussion of the activities should focus on the actions and/or words of the trainee in relation to the process of assessing learning achievement and progress: the instructions given to the learners, the feedback on the learners' understanding, the opportunities given to the learners to fill in the gaps, to correct incorrect learning etc. The discussion took place immediately after the educational activity and was videoed, which facilitated the data analysis process. The feedback

conversation between the trainee and the mentor was observed for 20–30 minutes. At this stage, the researchers only observed the discussion without intervening in the conversation. Throughout the study, each mentor's feedback activity was observed twice. In total, 10 observations were carried out.

After the observation, the researchers invited the mentors to meet again. Several meetings were scheduled, with intervals of several months between each meeting. The purpose of the first meeting was a cross-interview with one hour allocated for each of the observed supervisors. Before the interviews, the researchers selected several sequences of the videoed observations showing how the supervisors give feedback to the student teachers. These sequences focused on the element related to the assessment of the children's learning achievements and progress. In this way, an initial observational analysis was performed.

The cross-interview included the video material of the mentor giving feedback to a student teacher. The observed mentor was given the opportunity to explain her activities and comment on the student's actions, express her view of the situation, clarify certain comments, etc. The other mentors listened attentively and were then asked to give questions to the observed mentor to gain more information, stimulate reflection, and share their own perspectives on the various comments made by other mentors. Two cross-interviews took place during the first meeting, and the other three interviews were carried out during the period of one month.

Analysis of the research data:

- a) *the analysis of observation* is qualitative and interpretative (Anadón & Savoie-Zajc, 2009). It consists of extension of the sequence of actions as a relationship emerging between the subject's goals when faced with a situation and interpreting it, and the subject's knowledge, on the basis of which a partial and subjective representation of the subject occurs (Van Der Maren & Yvon, 2009). In order to develop the direction of the study in this way, the data were analyzed using thematic analysis, the aim of which was to identify semantic units (Negura, 2006). In this case, the semantic units were coded according to distinct categories that allowed understanding the objects of observation (the student teacher's instructions given to the learners, the feedback on the learners' understanding, the opportunities given to the learners to fill in the gaps, to correct incorrect learning etc.) about which the mentor provided feedback to the student teacher during the discussion. This analysis indicates forms of support and attitudes towards the support provided. For example, during the discussion, one mentor takes a normative approach, stating what the trainee should do: "*You shouldn't give that task now*". The coding was carried out by the researchers. In the case of the first two transcriptions, the researchers agreed on the coding and the definitions that underlie each code. This methodological action is part of the concept according to which analysis is not an individual exercise but the result of a joint agreement;
- b) *cross-interview analysis* was carried out applying Theureau's (2006) technique. Tables with two columns were constructed from the observation data. The first

column contains the transcription of the semantic unit of the observation. The second column contains the comments provided by other mentors during the cross-interview. This allows the data collected through observation and cross-interview to be compared in order to better understand the importance that the observed mentor gives to her actions, and to identify the forms of support and the mentor's attitude towards the support provided.

Limitations of the study: finding research participants posed some difficulty in this pilot study. When the research process and the observation and cross-interview procedures were explained, some of the teachers approached refused to take part in the study. There were some sensitive reasons identified: feeling uncomfortable in a group of strangers during a cross-interview, feeling nervous when a video recording is made, lack of time due to the teachers' busy schedules etc.

Some authors (Theureau, 2006; Zinguinian & André, 2017) also agree that preparation and performance of a cross-interview may be an expensive and time-consuming process. Due to the fact that information is collected from a number of different sources, it may be difficult to structure, understand and analyze the data collected. In structured interviews, it may be more difficult for the participants to act spontaneously, which may limit a deeper understanding of the participants' opinions and experiences by the researchers.

Results

Research findings: forms of support and the underlying approaches in contextualizing academic knowledge

This section contains only the most illustrative forms of mentoring support and transcripts of the underlying approach. As these are excerpts, they are far from being representative of the full corpus of data. It is also important to note that the supervisor and trainee regularly discussed trainee's activities, jointly selecting the pedagogical elements of interest. Although the focus was on assessment of educational achievements and progress, it was also possible to observe other relevant areas of educational activity during the interactions with the pupils that needed to be discussed at that time. The excerpts below demonstrate the different forms of support used by each mentor and the underlying approach with respect to the students putting their academic knowledge into practice.

M1: mentor's support for the student as a source of professional development. From the very beginning, participant M1 viewed the practicum as an opportunity for continuous learning through analyzing and reflecting on her own and the student's teaching practice. M1 put a lot of effort into student teacher developing a good rapport with the learners to make it easier for the children to focus on the activity. During the first meeting, M1 explained that her support for the student teacher was based on the *speculative approach*. She analyzed the possibilities the student teacher had in order to give the best advice. When providing feedback on the student's teaching, M1 used reflective

questions focusing on the student's goals and helping her to adjust teaching strategies. Such form of support is defined as coaching. Following is an example:

M1: *How are you feeling now having changed the educational activity?*

Student teacher: *I think I am fine.*

M1: *How are the children feeling?*

Student teacher: *Everybody is fine, only R. looked somehow upset, he did not want to speak [about his family relationships].*

M1: *Actually, the strategy you used, it is really suitable, but did it all go the way you had planned?*

Student teacher: *I explained to them because this was the first time we did it [creating a family book]. We have never done it before, so I explained what it is [family relationships]. That's why I wanted to give it time and explain [...]. I asked G. to explain to me [what family relationships mean], and she started naming all her aunts, uncles, cousins, grandparents, where they live, what they do...and then other children started to speak about their relatives ... I think I might have spent a little more time than planned.*

M1: *Yes, it took a little too long... what could you have done differently?*

Student teacher: *Maybe, I could have just asked if anybody knew what it was [relatives], I might have saved more time... okey, next time I will know what I must do differently... (Observation 1).*

During the first cross-interview, M1 explained her actions based on a university course on strategies aimed to facilitate reflection on activity: ... *when I was at university, a teacher inspired me, who said that [...] the most useful is the feedback when you stop and look back at your activity from a distance like a bird's eye view [...] you see yourself, the people next to you and your activity [...] good questions allow you to understand appropriateness of your performance of the tasks [...], the consequences [...] and the reasons"* (Cross-interview 1).

During the second cross-interview, M1 explained that the student teacher exceeded her expectations, was able to foresee the possible difficulties and logically think and act quickly. Thus, the moments of feedback looked more like a real dialogue aiming at creating new situations of assessing achievements and progress in a collaborative way and acquiring practical skills of assessment. This is consistent with a dialogue-based approach to support, and the feedback is like a „sandwich”: comprising positive feedback followed by constructive criticism, and concluded with another positive comment. This helps to reduce the defensive response and stimulates the student teacher's growth and professional development (Cross-interview 2).

M2: the issue of discipline and the normative nature of the mentor's support. During the first observation, mentor M2 emphasized that the group of children were not very disciplined, which meant that a lot of effort would be needed to keep the children's attention and discipline during the educational activity. The activity of "Colour hunting" involved each child finding one thing of each colour – red, blue and yellow – in the classroom

and putting the items into a basket. When giving her feedback, mentor M2 emphasized that the student teacher had to ensure discipline in the classroom which would help her build self-confidence and professional identity. During the first observation, M2 made sure that the student teacher understood both formal and informal rules for maintaining discipline and expectations. This is a specific and clear element of a normative approach to support. It was obvious that the mentor took on the role of advisor and supervisor by guiding the student's behaviour, and her feedback was permeated with the idea of a veteran communicating her experience. Following is an example:

M2: *Do you think everything was done well?*

Student teacher: *Well, it was quite okay, but the group was very large [...], but everything else was fine...*

M2: *You told me you knew the steps which should be done to keep discipline in the classroom [...], why did the children start running around, jostling and racing to get the item first?*

Student teacher: *Well, maybe because I forgot to tell them to be quiet and careful...*

M2: *You could have divided the children into small groups so that it was easier to watch their behaviour [...], you should have ensured everybody's participation, and you could have allocated a certain part of the classroom space for each group...*

Student teacher: *How could I have known that I had to divide the children into groups during "Colour hunting"? I even didn't know very well what "hunting" was about...I will know that next time...*

M2: *Did you see the children picking items of various colours not only those of red, blue and yellow? How did this happen?*

Student teacher: *Maybe, because there were too few items of those colours ...*

M2: *Listen to a „veteran“: if you had shown the children cards of red, blue and yellow colours, there wouldn't have been that chaos...*

Student teacher: *So, they can't distinguish the colours yet?*

M2: *And my last question: What was the goal and benefit of this activity for the children? What did they learn?*

Student teacher: *At least they enjoyed themselves and had a good time.*

M2: *But this is an educational institution and not an amusement park, isn't it? (Observation 1).*

During the first cross-interview, M2 explained her being directive because the trainee wouldn't listen and didn't change her actions much, and doubted the trainee's abilities: *"... I found her behaviour strange, maybe teaching is not her job as she isn't keen to learn [...] when I ask her about something, it's not an answer but a retort that comes back, I don't know whether this is acceptable [...] she said she knew about discipline, but it all went out of her control..."*. This demonstrated the type of feedback chosen by the supervisor based on the importance of being specific and clear about what was done well and what could be

improved. This helps the student teacher to understand clearly which actions are desirable and which are inappropriate (Cross-interview 1). During the second observation, M2 changed her strategy inspired by M1. She chose a reflective questioning for giving feedback:

M2: *What was your greatest achievement in maintaining discipline during the game?*

Student teacher: *It's difficult to say, but at least the children's emotions were running high...discipline was lacking...*

M2: *What were the greatest challenges?*

Student teacher: *When L. started misbehaving, I suggested he should go to a „quiet corner” for a moment to calm down, but L. started to cry [...], then I didn't know what to do [...] comfort him or ignore ...*

M2: *What do you think you could do differently to achieve better results in maintaining discipline?*

Student teacher: *I would ask your advice before starting the activity... (Observation 2).*

During the second cross-interview M2 explained the change of her behaviour: “... *during the practicum in spring, I couldn't establish and maintain a good relationship with the student. I felt some tension, it was difficult to enter the classroom and watch her [...] activity, it seemed as if she didn't like me, and I didn't like her [...] Then I started to think why that was the case, and realized there was no need to put so much pressure on the student [...] That's why this time I acted in a different way when giving feedback*”.

The other participants wanted to know if that approach was more useful than the previous strictly normative approach. M2: “... *it depends, which way is more useful [...], this time the relationship is better, but I don't know if that means anything to her, if that will help her maintain discipline better in the future [...] I don't know ...she still lacks experience*”. This shows that M2 was still in the position of an expert, i.e. she was not inclined to replace her normative approach with another approach. Although she realized the student's need to develop her practical activity, it was also important to ensure good relationships. This may be considered as a sign demonstrating possible changes in the professional behaviour and attitude to support. However, participant M5 commented on this situation as follows: “... *it seems to me that despite the importance you attach to good relationships [...], when asking questions, you wanted to get the answer which you expected [...] when the student finishes expressing her thoughts, you will resume your normal practice[...], because you are convinced that support means transfer of the knowledge gained through experience, giving advice, showing, correcting some behaviour [...]. Everybody uses their way, and I don't see anything wrong with that*”. This shows the apprenticeship form of support prevailing in this case (Cross-interview 2).

M3: dialogue as co-design of support services. Participant M3 spoke very warmly about her mentee as a person with many strengths and abilities. This was the only mentor who said she wanted to help the trainee to strengthen her skills in assessment. At

the beginning of the practicum, M3 demonstrated, explained and gave advice on how to perform assessment. The student was encouraged to observe and make notes. This was aimed at transferring expert experience and knowledge to the student. During the first observation, M3 asked the trainee about particular aspects of the assessment situation, and on receiving the answer, she offered some adjustments explaining what she would do herself in that situation.

During the first cross-interview, M3 explained that the situation chosen by the trainee was too difficult for the children. Although the trainee was aware of that, she still wanted to give it a try. Therefore, M3 chose the dialogue-based support to allow the student an opportunity to think of new solutions.

During the second observation, M3 asked questions about the trainee's intentions, class management and the emotions experienced by both her and the children. After each task the student had an opportunity to reflect on what she learnt, what was challenging and how she could improve. This helped to better understand the strengths and weaknesses. As this was the first time M3 had the trainee in her classroom, the conversations proved the appropriateness of support in the form of counselling through guiding the student by asking questions. During the second observation, the trainee took the lead in the conversation, expressing her agreement or disagreement with the supervisor, in other words, a form of reverse mentoring and dialogue-based approach were adopted.

M4: the collegial nature of support provided. M4 described the trainee as a „colleague”. In her opinion, the trainee showed initiative and suggested a lot of new ideas. M4 particularly wanted to improve the student's class management and activity differentiation skills. She also wanted the student to have the ability to perform assessment in a professional manner. During the first observation, M4 was not being directive. She started the discussion with the things the student observed by herself.

During the first cross-interview with other mentors, M4 confirmed this observation, explaining that the student knew her way. The situation observed was also very similar to that presented to the supervisor a few days before. Therefore, according to M4, it was easy to build on what the supervisor had said and thus justify the exchange of opinions. Although M4 felt ill at ease suggesting the strategies different to those suggested by the student teacher herself, she did not express her opinion. Therefore, we believe that the feedback showed considerable empathy. It is very important to show empathy and understanding when providing feedback, which helps to build trust and stimulates open communication.

During the second observation, M4 adopted a dialogue-based approach. This kind of support is similar to coaching as it allows the student teacher to reach her full potential.

M5: the student teacher as an assistant. Participant M5 viewed the trainee's activity as additional support in managing a very heterogenous group, which included five children with different special needs. As M5 was convinced that the student teacher should not be left on her own, she helped the student during the educational activity. In her opinion, the student teacher was performing very well, as she followed her advice. Participant M5 strictly adhered to the standards and principles.

The following excerpt demonstrates the great attention that the teacher gave to the assessment process. The student teacher asked the children to colour a snowman, add some details they liked, and then describe the result in two sentences.

M5: *Did you really expect such a result? The assessment indicators you designed say that the text should be consistent [...].*

Student teacher: *The children should be able to describe to me what they added to the two circles and what the snowman looks like now.*

M5: *That's right. Now you should correct the first criterion, there should be the consistency of the text indicated; even if it is not a text, but sentences, it should still be there.*

Student teacher: *The colours should be directly...*

M5: *Directly related to the snowman's activity or state. If the child says to you: "My snowman is singing", well, we cannot see any notes. Thus, this should have been your first criterion [...].*

M5: *The classroom did not have a very good discipline. You could have applied some incentives or used a visual reminder of discipline...*

Student teacher: *Yes, I could have, I will do my best next time... (Observation1).*

During the cross-interview, M5 explained that she started the feedback with a question aiming for the student to revise her instructions. During the whole situation the student teacher did not mention her expectations, except for the colouring of the snowman. Therefore, the introductory question asked by M5 was very important. During the cross-interview meeting, M5 was surprised by the authoritarian mode of her own behaviour: "... never thought I was being so bossy, when I saw this video, it really surprised me" and could see herself being more involved in the dialogue than the student teacher (Cross-interview 1).

During the second cross-interview, M5 adopted reflective questioning seeking to help the student to use reflection on the ways facilitating better assessment of learning achievements and progress.

Discussion

Analyzing the results of the research, it is important to point out that the research focuses on how mentors support students during their practicum helping them to put their theoretical knowledge into practice when assessing children's achievements and progress. The research shows that the mentors' attitudes to support for students are closely linked with their approach to the practicum.

Some mentors view practicum as an opportunity for professional development, continuing learning or an opportunity for reflection on one's own practice. In this case, the participants choose the dialogue-based support, and treat the student teacher as an equal partner. Support is provided in the form of coaching which is focused on developing the mentee's potential based on their needs (Paul, 2002). It was also interesting

to notice that the participants, who adopted this form and approach to support, also reflected on their own practice of assessment. The discussions with the students allowed them to validate and consolidate their assessment practices.

When the mentor perceives the trainee as an assistant, they adopt behaviour of a model teacher in respect to the trainee. Such mentors do not consider the student as a pre-service teacher who already is in the process of professionalization. However, the pedagogy students who are in their second or third year, may already have a wealth of sufficient and interesting experience, as they have already had some practicums before, which involved different models of mentor's behaviour. In this case, the mentor's support is primarily of a normative nature (Leclercq et al., 2014).

The collected data showed that the normative-approach based support may be linked to managing a group of children when maintaining discipline. The research participants M2 and M5 clearly expressed their concern about the trainee's ability to manage the group in a disciplined manner. This lower confidence in the trainee's ability to manage the situation led to a certain form of support – individual mentoring or apprenticeship (Paul, 2002), which emphasizes the need to be with a more experienced person seeking to learn, and leaves little space for the mentees' reflections. It should also be pointed out that in the case of normative support the question of the trainee's assessment performance was not included in the feedback comments, which makes one wonder what level of importance the mentors attached to the trainees' assessment competences.

The study revealed the difficulties pre-service teachers encounter in practice when contextualizing the knowledge acquired during their studies of assessing learning achievement and progress. In any case, the student teacher should be helped to identify the links between the knowledge acquired during their studies and its practical applicability (Monney et al., 2018; Portelance, 2010). This study shows that some mentors do not address this issue with their trainees. It should be borne in mind that the researchers recommended that the mentors, i.e. the participants in the study, when giving feedback, should discuss the mentee's assessment practices during their interactions with the children. However, in the case of two of the participants, priority was given to group management and maintaining discipline, rather than focusing on other essential elements that could justify a certain loss of control over the group related to clarifying the educational objectives, structuring the activities according to the objectives, noticing signs of understanding on the part of the children, etc.

This research assumption, although based on the small number of participants observed, raises questions about the importance given to the process of assessment of learning achievements and progress during the practicum. Nevertheless, it is interesting to note that those mentors who adopted a dialogue-based approach were more successful in promoting the development of assessment skills and, presumably, other complex skills. Dialogue allows for the expression of the different knowledge of both the trainee and the supervisor (Leclercq et al., 2014) and possibly focuses the discussion towards planning and evaluation processes, rather than focusing on what was not included in the planning of the student's practicum.

Finally, it is interesting to note that the cross-interview also served as a tool for the participants' professional development (Clot et al., 2000) with the exception of M2, who did not change her attitude to support. It was found that the more the other participants in the study got to know the student teacher, the more their support became based on dialogue. One of the turning points was the first cross-interview. After learning about M1's approach, other participants in the study had a revelation: they realised that it is not always necessary to guide the student by telling her how to behave. Asking the trainee reflective questions about her intentions, strategies and results may help her to reflect and become more independent.

This newly emerging data was not the focus of the study, but it is worth highlighting. The fact that the mentors in the study were asked to look at themselves collectively (Clot et al., 2000) led them to understand how they supported their trainees and how they viewed the practicum. Therefore, consideration should be given to the possibility of creating mechanisms for mentors to exchange ideas on how to support the student, learn about other mentors' support practices, and compare their own experiences with those of other mentors. This would undoubtedly have a positive impact on both the development of mentoring cooperation and training of student teachers as well as development of their professional skills and the whole process of professionalization.

Conclusions

This empirical study confirmed the research assumption that there are difficulties for student teachers in contextualizing knowledge during their studies. The study revealed that student teachers find it difficult to put academic knowledge into practice, especially when assessing children's achievement and progress.

In response to the problem question (What is the nature of and approach to the mentor's support to the student during the practicum in attempting to conceptualize the acquired academic knowledge in the assessment of the children's educational achievements and progress?) and based on the research findings, it can be argued that the form of support chosen by mentors and the approach that underlies it are closely linked to the mentors' approach to the practicum. The study found that mentor's support may be expressed in different ways, and the forms of support vary:

- a) *dialogue-based support*, when the mentor responds to the student placement as a personal professional development opportunity and chooses dialogue-based support, treating students as equal partners, using a form of counselling and/or guidance. The ultimate aim of such forms of support is not only to benefit the personal and/or professional growth and professionalisation of the less experienced mentee, but also the mentor's own moral satisfaction from providing support and their own growth;
- b) *speculative-approach-based support*, when the mentor analyses the students' possibilities in order to provide them with the best possible advice, and when providing the feedback discusses the students' performance, using reflective questioning,

focusing on the students' goals and helping them to adjust their performance strategies. In this case, the predominant form of support is defined as coaching;

- c) *normative-approach-based support*: when the mentor sees the students as assistants and provides directive support, more focused on children's group management and discipline. In this case, the predominant form of support is individual mentoring.

The results of the cross-interview revealed the need to understand and improve professional practice through collaboration and reflection, in other words, to promote the process of professionalisation of both actors – the mentor and mentee.

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RELATIONSHIPS BETWEEN MOTOR AND PSYCHOPHYSIOLOGICAL ABILITIES IN ADOLESCENTS WITH MILD MENTAL DISORDERS

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ABSTRACT

Mental health disorders limit a person's ability to work and take full care of themselves. In the adolescent period, children with mild mental health disorders need to have a good sleep regimen, to develop the ability to control emotions, and to regularly engage in sports activities. The aim of the work was to study the correlations between motor and psychological abilities in 11–16-year-old adolescents with mild mental health disorders. The motor abilities of 12 adolescents with mild mental health disorders were assessed with the Bruininks-Oseretsky Motor Development Test (Part 2), and psychophysiological parameters were determined using the Vienna Test System. The relationship between the motor abilities of adolescents and the indicators of psychophysiological parameters was assessed using the Pearson correlation coefficient method. The results of the study showed that the motor skills of adolescents with mild mental health disorders were below the average level of development, but in balance exercises, they were very low. The results of the Vienna tests were divided into 2 groups: the results of 11–14-year-old adolescents and the results of 15–16-year-old adolescents, based on the observations that the attitude of the two groups towards the performance of the Vienna tests was different. Older group adolescents performed work more slowly, but more carefully and accurately, completing the test tasks. Adolescents of the younger group were characterized by chaotic activity and the inability to concentrate on work for a long time. The results of the correlation analysis showed that there is a correlation between separate indicators of motor development and psychophysiological parameters; therefore, physical activities play an essential role in the prevention and treatment of mental health disorders in adolescents.

Keywords: *adolescents, mild mental disorders, motor abilities, physical activities, psychophysiological parameters*

Introduction

Mild mental disorders in adolescents are an important social problem that affects adolescents, their parents, and educators. Worldwide, 10% to 20% of children and adolescents are diagnosed with mental or behavioral disorders, and especially during adolescence, the risk of developing various mental health and emotional disorders increases significantly (Kieling et al., 2011). 50% of all adult mental disorders have their onset in adolescence (Belfer, 2008). Intellectual disabilities affect cognitive, language, motor, and social skills. They affect the overall level of intelligence, cause learning difficulties, and slow down the child's development. The degree of mental disorders is determined using standardized intelligence tests. According to the International Classification of Diseases, mild mental disorders (mild mental disability) are designated by the code F 70 (International Statistical Classification of Diseases and Related Health Problems, 2019). The approximate Intellectual Coefficient (IQ) for children with mild mental disorders ranges from 50 to 69. Intellectual abilities and social adaptation can change over time and, although lagging behind the average level, can improve as a result of training and rehabilitation. In adulthood, in many cases, despite mild intellectual disabilities, a person will be able to work and maintain good social relationships and contribute to society (International Statistical Classification of Diseases and Related Health Problems, 2019).

For children with mild mental disability, it is difficult to determine when adolescence ends and when the young adult period begins. For some adolescents or young people with mild mental disorders, the onset of the characteristic old age is delayed by one or two years. Adolescents with mild mental disability often experience irritability, unmotivated mood swings, and loss of interest, and sometimes they could be characterized by insistence, persistence, or satisfaction of selfish interests. Adolescents need to be accepted by their peers. Social skill interventions are effective measures to reduce the risk of developing mental disorders for children with mental disability (Adeniyi & Omigbodun, 2016). The implementation of psychological and pedagogical follow-up programs can be used to prevent the antisocial behavior of adolescents with mild mental disorders. The task of educators is to teach their students a love of work and to promote social adaptation (Keenan et al., 2025). An important task for educators is to choose the right teaching and learning methods and systematically monitor and evaluate students' acquisition of social skills.

Sports activities are a significant factor in improving the functioning of children with mild mental disability (Ghosh & Datta, 2012). Research indicates that a person's physical fitness and state significantly impact their psychophysiological parameters (Podrigalo et al., 2019). For many people with disabilities, postural and gait abnormalities are a direct result of a deterioration in their posture or body balance and postural stability. In students with developmental disabilities, these problems appear in early motor development, when walking, climbing stairs, or in stereotyped gait movements (Cech & Martin, 2012). Children with coordination disorders have lower muscle strength and an inability to maximize force and change force-velocity and tolerance. Their physical

development is relatively lower than their peers who do not have similar health problems (Farhat et al., 2015). Simple movements such as walking and running help maintain good posture. Physical activity should be encouraged to prevent limb immobility and joint stiffness. If an individual does not develop a combination of activities for developing strength and stability, it is difficult to achieve coordinated movement (Horvat et al., 2019). Regular physical activities adapted to the child's individual needs and age positively affect the child's cognitive and physical growth and maturation, but childhood physical activity contributes to better health and well-being in adulthood (Kostecka et al., 2017). It is found that a healthy lifestyle is related to fewer subjective somatic and psychological complaints (Klavina et al., 2021). Physical activity promotes healthy living, as well as integration into society and the school environment. This can result in a sense of well-being that promotes self-esteem and self-confidence. One of the main goals of physical activity is to ensure that every individual has the opportunity and desire to be physically active, which becomes a part of their lifestyle (Horvat et al., 2019).

The aim of the work was to study the correlations between motor and psychological abilities in 11–16-year-old adolescents with mild mental health disorders.

Methodology

Participants

The study was carried out at Riga Special Education Primary School – Development Center. The motor abilities and psychophysiological parameters of 11–16-year-old adolescents with mild mental disorders were determined. 12 adolescents who studied at a special education primary school according to the special education program with the code 21015811 were appreciated. The relationship between the motor abilities of adolescents and the psychophysiological parameters was assessed.

Bruininks – Oseretsky Bot-2 test

The motor skills of adolescents were assessed using the Bruininks – Oseretsky Bot-2 method (Bruininks & Bruininks, 2005). The Bruininks-Oseretsky test is individually developed for measuring different motor abilities, in which targeted and effective tasks are performed to assess the development of small and large motor skills in people aged 4 to 21 years. Using the Bruininks – Oseretsky Bot-2 test, it is possible to determine the state of an individual's physical fitness and the delay in the development of motor abilities according to the age of the child. Movement skills were assessed using four subtests of the Bruininks – Oseretsky Test of Motor Proficiency II (BOT-2): 1) upper body bilateral coordination (7 tasks), 2) balance (9 tasks), 3) speed (5 tasks), and 4) strength (5 tasks).

The upper body bilateral coordination tasks were: 1) touching the nose with the index finger – eyes closed; 2) jumping jacks; 3) jumping in place – same sides synchronized; 4) jumping in place – opposite sides synchronized; 5) pivoting thumbs and index fingers; 6) tapping feet and fingers – same sides synchronized; 7) tapping feet and fingers – opposite sides synchronized.

The balance tasks were: 1) standing with feet apart on a line – eyes open; 2) walking forward on a line; 3) standing on one leg on a line – eyes open; 4) standing with feet apart on a line – eyes closed; 5) walking forward heel-to-toe on a line; 6) standing on one leg in a line – eyes closed; 7) standing on one leg on a balance beam – eyes open; 8) standing heel-to-toe on a balance beam; 9) standing on one leg on a balance beam – eyes closed.

The speed tasks were: 1) shuttle runs; 2) stepping sideways over a balance beam; 3) one-legged stationary hop; 4) one-legged side hop; 5) two-legged side hop.

The strength tasks were: 1) standing long jump; 2) full push-ups/knee push-ups; 3) sit-ups; 4) wall sit; 5) V-up.

The total point scores of the four subtests were calculated and converted to scale scores, standard scores, percentiles, age-equivalents, and descriptive categories for each subtest.

Vienna tests

Students' psychophysiological parameters were assessed using the Vienna tests. The Vienna Test System (VTS) is one of the leading computerized psychophysiological assessment methods developed by Austrian scientists, which includes a variety of tests covering different aspects of psychophysiological assessment and diagnosis. The tests have high values of validity and reliability, which have been confirmed by specially performed studies at the test development company "Schuhfried" in Vienna (The Vienna Test System. Schuhfried, 2025).

The following Vienna tests were used: Adaptive Matrices Test (AMT), Cognitrone test (COG), Determination Test (DT), Figural Memory Test (FGT), Reaction Time Test (RT06), and STROOP Test (STROOP).

The AMT test is a non-verbal test that assesses general intelligence in terms of logical reasoning. In each test stage, 9 squares are displayed, which appear in the upper part of the screen. Eight of the squares contain geometric figures, and the last square contains a question mark. The 8 figures are interconnected by certain regularities. The respondent's task is to identify these regularities and replace the "?" sign (logically correct) with one of the figures shown below the squares. This test provides information about the respondent's level of non-verbal intelligence.

The COG test describes a person's work style, the speed of information processing, the persistence of attention, and the ability to focus on work. During the test, the respondent must compare various figures and decide on their identity.

The DT test is used for the measurement of reactive stress tolerance (stress resilience) and the ability to react in difficult situations under complex stimulus conditions. During the test, visual and acoustic signals are presented at high speed, to which a person must respond as quickly as possible, and an appropriate response must be given. The test results can be used to assess an individual's ability to work under stress.

The FGT test is used to assess episodic memory for shape recall and shape learning. The first part of the test consists of five stages of shape presentation and reproduction, in which 9 shapes are repeatedly presented. Immediately after each stage of shape

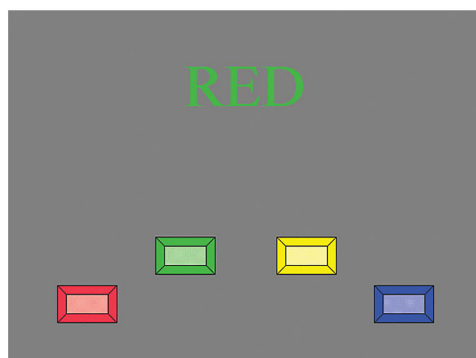
presentation, the shapes must be reproduced using computer mouse clicks on the screen. After a 5-minute break, the second part of the test follows, during which the shapes must be reproduced without being shown. The third part of the test involves the reproduction of shapes after a 30-minute break. After that, it is necessary to recognize which shapes have been previously presented and which have not been previously presented.

The RT06 test is used to assess the ability to respond to simple stimuli with both the right and left hands.

The STROOP test is a sensorimotor speed test that measures speed in reading words and naming colors under conditions of color/word interference. The respondent in the first part of the test must react according to the meaning of the written word (reading words), but in the second part of the test, a person must react according to the color of the written word (naming words) (see Figure 1). The STROOP test assesses the ability to inhibit cognitive interference that occurs when the processing of a specific stimulus feature impedes the simultaneous processing of a second stimulus attribute.



A



B

Figure 1 Vienna tests panels

A. The computer panel of the Vienna tests. B. Sensory response assessment during the STROOP test in response to the color of the word

Statistical analyses

The obtained data in the research were processed using the “Microsoft Office Excel” program and the “Microsoft Office Excel” add-in “Statistics 3.11.” and SPSS – Statistical Package for the Social Sciences (SPSS Version 28). The correlation analysis was assessed using the Pearson correlation coefficient method (Pelšs, 2015).

Results

Bruininks-Oseretsky Test (BOT-2) results

Assessing the physical parameters of adolescents with mild mental disorders, the obtained results were compared with the parameters of the corresponding age group. It was assessed whether the physical parameters were appropriate for the age group or whether they lagged behind the parameters of the characteristic age group. The age group to which the level of physical fitness of adolescents corresponds was assessed (see Table 1).

The average age of the study group was 13.01 years. According to the BOT-2 tests, the results of motor abilities showed that the coordination of upper body movements in adolescents with mild mental disorders corresponded on average to 8.17-year-old children (lagging behind the norm by 4.84 years). The balance parameters in adolescents with mild mental disorders corresponded on average to the results of 11.32-year-old children (the age difference with the norm was 1.69 years). The speed results of adolescents with mild mental disorders corresponded to the results of 8.79-year-old children (the age difference from the norm was 4.22 years). The strength results of adolescents with mild mental disorders corresponded to the results of 10.36-year-old children (lagging behind the norm by 2.65 years). The results of the study showed that the motor abilities of adolescents with mild mental disorders were below the average level of development, especially lagging behind the norm in coordination and speed parameters.

Table 1 Average ages of adolescents with mild mental disorders according to motor abilities assessed by Bruininks-Oseretsky Motor Development Test (Part 2) results

Parameters	<i>n</i>	Minimum value	Maximum value	Average age of the group (years)	The age difference with the norm (years)
Age	12	11	16	13.01	
Upper body bilateral coordination	12	6	11	8.17	4.84
Balance	12	6	18	11.32	1.60
Speed	12	5	14	8.79	4.22
Strength	12	7	18	10.36	2.65

Vienna Test results

Adolescents with mild mental disorders, when analyzing the results of the Vienna tests, were divided into 2 groups: 11–14-year-old students (7 students) and 15–16-year-old students (5 students). The division into age groups was made based on observations that the behavior and attitude of the two groups of students towards the performance of the Vienna tests differed. The results of the Vienna tests of both groups of students were compared with each other and with the results of the entire group.

The results of the Vienna Adaptive Matrix Test (AMT) (see Table 2) showed that 15–16 years old adolescents with mild mental disorders made fewer errors during the test (the average number of correct answers in the group was 7 ± 4.3 and the number of errors was also 7 ± 4.3) than 11–14 years old adolescents with mild mental disorders (the average number of correct answers in the group was 4.43 ± 1.99 , but the number of errors was 9.57 ± 1.99). The average IQ for the older group of adolescents was -2.75 ± 1.96 , but for the younger group of adolescents, it was -3.41 ± 0.77 . These scores are below the norm for both groups, but they are better for the older group of adolescents. The percentage IQ for the older group of students was also significantly higher (18 ± 19.33) than for the younger group of students (2.43 ± 3.05). When analyzing the results, it should be noted that the tested students have mild mental disorders, therefore the average IQ scores in both groups are low, however, for the older group of students they are significantly higher, and observing the behavior of the students, it was noted that the students of this group were better able to mobilize themselves to complete the test.

Also, in the Vienna Cognitron Test (COG), the number of correct answers from the older group of adolescents with mild mental disorders was significantly higher (50.4 ± 9.34) than the number of correct answers from the younger group of adolescents (46.29 ± 10.55), and the older group of adolescents made fewer errors in comparison with the younger group of adolescents (see Table 3). In turn, the average reaction time of the younger group adolescents was significantly shorter both for correct answers (2.58 ± 1.63 s) and for incorrect answers (2.3 ± 1.27 s) than for the older group adolescents (3.17 ± 1.25 s for correct answers and 3.8 ± 1.75 s for incorrect answers). The results show that the younger group of adolescents worked faster but less accurately.

Table 2 Vienna Test – Adaptive Matrix Test (AMT) results for adolescents with mild mental disorders ($M \pm sd^*$)

Age	Number of correct answers	Number of mistakes	Intelligence score	Intelligence percentage
11–14	4.43 ± 1.99	9.57 ± 1.99	-3.41 ± 0.77	2.43 ± 3.05
15–16	7 ± 4.3	7 ± 4.3	-2.75 ± 1.96	18 ± 19.33
The whole group 11–16	5.5 ± 3.26	8.5 ± 3.26	-3.14 ± 1.36	8.92 ± 14.32

* M – mean of group results; sd – standard deviation

Table 3 Vienna Test – Cognitrone Test (COG) results for adolescents with mild mental disorders ($M \pm sd^*$)

Age	Number of correct answers	Number of incorrect answers	Reaction time to correct answers (s)	Reaction time to incorrect answers (s)
11–14	46.29 \pm 10.55	13.71 \pm 10.55	2.58 \pm 1.63	2.3 \pm 1.27
15–16	50.4 \pm 9.34	9.6 \pm 9.34	3.17 \pm 1.25	3.8 \pm 1.75
The whole group 11–16	48 \pm 9.84	12 \pm 9.84	2.83 \pm 1.46	2.93 \pm 1.61

* M – mean of group results; sd – standard deviation

Table 4 Vienna Test – Determination Test (DT) results for adolescents with mild mental disorders ($M \pm sd^*$)

Age	Number of correct reactions	Number of incorrect reactions	Number of omitted reactions	Median of reaction time to stimuli (s)	Total number of reactions	Total number of stimuli
11–14	137.25 \pm 47.73	31.88 \pm 19.37	24.13 \pm 7.7	1.01 \pm 0.1	169.13 \pm 42.28	169.13 \pm 55.2
15–16	185 \pm 20.33	23.2 \pm 18.24	21.4 \pm 4.98	0.92 \pm 0.1	212.8 \pm 21.65	208.2 \pm 25.78
The whole group 11–16	155.62 \pm 45.29	28.54 \pm 18.68	23.08 \pm 6.69	0.98 \pm 0.11	185.92 \pm 41.09	184.15 \pm 48.89

* M – mean of group results; sd – standard deviation

The results of the Vienna Determination Test (DT) show that the older group adolescents with mild mental disorders had significantly more correct reactions (185 \pm 20.33) but less errors (23.2 \pm 18.24) and omitted reactions (21.4 \pm 4.98) than the younger group adolescents (respectively, the number of correct reactions was 137.25 \pm 47.73, the number of incorrect reactions was 31.88 \pm 19.37 and the number of omitted reactions was 24.13 \pm 7.7) (see Table 4). The median of reaction time to stimuli was slightly shorter for the older group adolescents (0.92 \pm 0.1 s) than for the younger group adolescents (1.01 \pm 0.1 s). The older group of adolescents made more reactions during the test, so they worked more efficiently.

Performing the Vienna Figure Memory Test (FGT) (see Table 5), the total number of correctly reproduced figures during the demonstration of a series of 5 figures was significantly higher for adolescents with mild mental disorders from the older group (22 \pm 10.58) than for adolescents from the younger group (15 \pm 6.3). After a 5-minute break, the older group of adolescents was able to reproduce more figures (4.8 \pm 3.35) than the younger group of adolescents (2.29 \pm 2.5). However, after a 30-minute break, the younger group of adolescents showed even better results than the older group of adolescents (on average, 4.1 \pm 2.18 figures were correctly reproduced by adolescents in the younger group, while 3.5 \pm 2.17 were reproduced by adolescents in the older group). When performing figure recognition, adolescents from both groups showed the same results (adolescents from the older group correctly recognized 13 \pm 1.63 figures, while

adolescents from the younger group correctly recognized 13 ± 2.76 figures). The results suggest that the ability to retain figures in memory is not weaker in the younger group of adolescents in comparison to the older group of adolescents, as evidenced by the relatively good results in figure recognition and reproduction after a 30-minute break but the ability to concentrate on work is a major difficulty for adolescents from the younger group.

The results of the Reaction Time Assessment Test (RT06) (see Table 6) showed that the younger group of adolescents with mild mental disorders reacted significantly faster to a simple stimulus with both the right hand (358.88 ± 131.62 ms) and the left hand (414.63 ± 145.75 ms) than the older group of adolescents with mild mental disorders (respectively, the average reaction time with the right hand was 451.2 ± 326.93 ms and 495.2 ± 96.6 ms with the left hand). At the same time, it should be noted that the younger group of adolescents made more errors – they did not respond to all stimuli, responding with both the right hand and the left hand. The obtained results show that the younger group of adolescents worked faster, but less accurately than the older group of adolescents.

Table 5 Vienna Test – Figure Memory Test (FGT) results for adolescents with mild mental disorders ($M \pm sd^*$)

Age	1	2	3	4	5	6	7
11–14	15 ± 6.3	2.29 ± 2.5	1.29 ± 1.38	4.1 ± 2.18	2.5 ± 4.23	13 ± 2.76	5 ± 2.76
15–16	22 ± 10.58	4.8 ± 3.35	2.6 ± 3.29	3.5 ± 2.17	2.5 ± 1.91	13 ± 1.63	5 ± 1.63
The whole group 11–16	17.92 ± 8.68	3.33 ± 3.03	1.83 ± 2.33	5 ± 2.16	2.5 ± 3.34	13 ± 2.26	5 ± 2.26

* M – mean of group results; sd – standard deviation.

1 – Total number of correctly reproduced figures during the 5-figure series demonstration; 2 – Number of correctly reproduced figures after a 5-minute break; 3 – Number of incorrectly recognized figures after a 5-minute break; 4 – Number of correctly reproduced figures after a 30-minute break; 5 – Number of incorrectly recognized figures after a 30-minute break; 6 – Number of correctly recognized figures during the figure demonstration after a 30-minute break; 7 – Number of incorrectly recognized figures during the figure demonstration after a 30-minute break

Table 6 Vienna Test – Vienna Test – Reaction Time Assessment Test (RT06) results for adolescents with mild mental disorders ($M \pm sd^*$)

Age	Average reaction time (ms)	Average movement reaction time (ms)	Number of correct reactions	Number of omitted reactions	Number of incomplete reactions
11–14	358.88 ± 131.62	98.63 ± 1.85	1.38 ± 1.85	414.63 ± 145.75	97.88 ± 3.98
15–16	451.2 ± 326.93	100 ± 0	0 ± 0	495.2 ± 96.6	99.8 ± 0.45
The whole group 11–16	394.38 ± 218.9	99.15 ± 1.57	0.85 ± 1.57	445.62 ± 126.85	98.62 ± 3.2

* M – mean of group results; sd – standard deviation

Table 7 Vienna Test – Stroop test (interference test) (STROOP) (word reading test part) results for adolescents with mild mental disorders ($M \pm sd^*$)

Age	1	2	3	4	5	6	7
11–14	1.09 ± 0.22	1.06 ± 0.2	1.2 ± 0.41	32.43 ± 36.28	2.29 ± 3.09	30.14 ± 33.27	0.14 ± 0.27
15–16	1.4 ± 0.52	1.45 ± 0.68	1.5 ± 0.66	17.2 ± 32.9	3 ± 6.16	14.2 ± 26.76	0.05 ± 0.14
The whole group 11–16	1.22 ± 0.39	1.22 ± 0.48	1.32 ± 0.52	26.08 ± 34.25	2.58 ± 4.38	23.5 ± 30.52	0.1 ± 0.22

* M – mean of group results; sd – standard deviation

1 – Median of reaction time during all word reading (ms); 2 – Median of reaction time during congruent word reading (ms); 3 – Median of reaction time during incongruent word reading (ms); 4 – Number of errors during all word reading; 5 – Number of errors during congruent word reading; 6 – Number of errors during incongruent word reading; 7 – Word reading interference trend

The Vienna STROOP test consists of two parts: in the first part, the respondent must respond to the word, taking into account its meaning (word reading test), and in the second part, the respondent must respond to the color of the word, regardless of its meaning (word color assessment part).

In the STROOP word reading test part (see Table 7), the younger group of adolescents with mild mental disorders showed a shorter response time median (1.09 ± 0.22 ms) in comparison with adolescents of the older group (1.4 ± 0.52 ms). At the same time, it should be noted that adolescents in the younger group made more errors (32.43 ± 36.28) than the adolescents in the older group (17.2 ± 32.9). In particular, many errors were made by adolescents of the younger group in response to non-congruent words (words that differed in meaning and color) (30.14 ± 33.27). In response to congruent words (words that matched the meaning of the word and the color of the word), there were fewer errors (2.29 ± 3.09). These findings suggest that adolescents in the younger group often did not delve into test performance rules during word reading, did not fully read the words, and often responded not to the meaning of the word they wrote but to its color. Consequently, the trend of word-reading interference among younger adolescents was very high (0.14 ± 0.27). Adolescents in the older group also made more errors in reading non-congruent words (14.2 ± 26.76) than congruent words (3 ± 6.16), but this difference was smaller than for adolescents in the younger group, resulting in a lower trend of reading interference (0.05 ± 0.14).

In the STROOP color assessment test part (see Table 8), the reaction times of the younger and older groups of adolescents with mild mental disorders did not differ much. They were slightly shorter for the younger group of adolescents (0.99 ± 0.12 ms) than for the older group of adolescents (1.03 ± 0.27). The number of errors was higher for the younger group of adolescents (13.71 ± 13.56) than for the older group of adolescents (7 ± 9.08). When responding to incongruent words, both the younger and older groups of students made more errors than when responding to congruent words but the interference tendency for color evaluation was the same for the students of both groups (0.07 ± 0.06 for the younger group of students, and 0.07 ± 0.13 for the older group of students).

Table 8 Vienna Test – Stroop Test (STROOP) (word color assessment part) results for adolescents with mild mental disorders ($M \pm sd^*$)

Age	1	2	3	4	5	6	7
11–14	0.99 ± 0.12	0.95 ± 0.09	1.03 ± 0.12	13.71 ± 13.56	3 ± 3.96	10.71 ± 9.76	0.07 ± 0.06
15–16	1.03 ± 0.27	0.98 ± 0.21	1.05 ± 0.3	7 ± 9.08	2 ± 2.92	5 ± 6.2	0.07 ± 0.13
The whole group 11–16	1.01 ± 0.19	0.96 ± 0.14	1.04 ± 0.2	10.92 ± 11.93	2.58 ± 3.45	8.33 ± 8.64	0.07 ± 0.09

* M – mean of group results; sd – standard deviation

1 – Median of reaction time during the color evaluation of all words (ms); 2 – Median of reaction time during the color evaluation of congruent words (ms); 3 – Median of reaction time during the color evaluation of incongruent words (ms); 4 – Number of errors during the color evaluation of all words; 5 – Number of errors during the color evaluation of congruent words; 6 – Number of errors during the color evaluation of incongruent words; 7 – Interference tendency of color evaluation

Correlation analysis of physical (motor) parameters of Bruininks-Oseretsky Test (BOT-2) results, and psychophysiological parameters (Vienna Test results) of students with mild mental disorders

A correlation analysis (using the least squares algorithm) was performed for the most characteristic parameters of the Vienna Tests of adolescents with mild mental disorders, with the total scores of the BOT-2 test for assessing physical (motor) development.

A high correlation between the indicators can be considered if the correlation coefficient r is greater than 0.75. The second factor that determines the choice of the regression form is the coefficient of determination or the correlation coefficient squared (R^2) (R-squared). The closer the R^2 value of the coefficient of determination is to 1, the better the model described by the given linear regression equation (Pelšs, 2015).

Adaptive Matrix (AMT) Vienna Test Intelligence scores (see Table 9) for the younger group of adolescents with mild mental disorders (11–14 years old) show a certain correlation (the correlation coefficient r value is 0.606) with the total results of the BOT-2 test of motor development. These results indicate that there is a certain positive correlation between the general intelligence of the younger group of adolescents and motor development. In the older group of adolescents, such a correlation was not observed, which can be explained by the fact that the older group of adolescents was more heterogeneous.

The number of correctly assessed figures in the Cognitron Vienna test (COG) for adolescents with mild mental disorders in the younger group correlates to some extent with the total results of the BOT-2 test of motor development (the correlation coefficient r is 0.73, which is close to the result of a close correlation) (see Table 9).

Table 9 Correlation of the Vienna Test results and Bruininks-Oseretsky Test (BOT-2) results of adolescents with mild mental disorders

Test parameters	Age	Linear regression equation and coefficient of determination, R^2	Correlation coefficient, r
AMT the intelligence scores	11–14	$y = 0.035x - 7.047$ $R^2 = 0.367$	0.606
	15–16	$y = -0.091x + 7.967$ $R^2 = 0.111$	-0.333
	The whole group 11–16	$y = 0.024x - 5.785$ $R^2 = 0.051$	0.226
COG the number of correctly assessed figures	11–14	$y = 0.521x + -9.714$ $R^2 = 0.533$	0.730
	15–16	$y = -0.208x + 78.32$ $R^2 = 0.085$	-0.292
	The whole group 11–16	$y = 0.484x - 4.663$ $R^2 = 0.443$	0.665
DT the number of correct answers	11–14	$y = 1.849x - 50.655$ $R^2 = 0.492$	0.701
	15–16	$y = -0.798x + 279.309$ $R^2 = 0.08$	-0.282
	The whole group 11–16	$y = 1.839x - 42.417$ $R^2 = 0.425$	0.652
DT the number of omitted answers	11–14	$y = -0.42x + 68.187$ $R^2 = 0.673$	-0.820
	15–16	$y = -0.573x + 89.074$ $R^2 = 0.683$	-0.827
	The whole group 11–16	$y = -0.389x + 65.909$ $R^2 = 0.621$	-0.788

The number of omitted responses in the Determination Vienna Test (DT) test (see Table 9) shows a close negative correlation with the number of omitted responses both for the younger group of adolescents (correlation coefficient r is -0.820), for the older group of adolescents (correlation coefficient r is -0.827), and for the entire group of adolescents (correlation coefficient r is -0.788). These results show that adolescents with better physical fitness have fewer omitted responses in all age groups than adolescents with weaker motor development.

Discussion

Literature indicates that adolescents with mild mental disorders tend to have low physical fitness (Oppewal et al., 2013; Pitetti & Yarmer, 2002), aligning with the findings of our study. It is found that adolescents with mild mental retardation, environment, and social interactions play a crucial role in influencing physical activity (Stevens et al., 2018).

It is well known that physical activity promotes physical, mental, and intellectual development, but a person's psychophysiological state affects motor ability and the maturity of an adolescent's personality. A connection has been found between reading and motor skills, and trends have been discovered between physical development, mathematics, and attention, which indicates that it is necessary to develop both motor and academic abilities (Westendorp et al., 2011). Children with motor coordination difficulties experience greater psychological distress than their peers (Redondo-Tebar et al., 2021).

Interventions for promoting motor skills at school are necessary to improve children's mental health and quality of life (Gill et al., 2020). In our study, it was observed that the older group of adolescents was better able to concentrate on work and made fewer mistakes in the Vienna tests in comparison with the younger group of adolescents. This suggests that while studying in a special education elementary school, their abilities improve, and their attitude toward work becomes more responsible. Educators likely play a large role in this, and the efforts of educators to involve adolescents with mild mental disorders in physical activities are justified. At the same time, it should be noted that the teenagers, especially in the older group, were rather different, with different intellectual disabilities. In the upbringing of adolescents with mild mental disorders, cooperation between sports teachers, special educators, and physiotherapists is important. Efforts to improve movement coordination skills, various types of exercises, and mental exercises, as well as promoting an active lifestyle, are crucial for adolescents with mild mental disorders.

Riga Special Education Primary School – Development Center pedagogues pay great attention to providing physical activities for adolescents with mild mental disabilities. Adolescents engage in physical activities both during sports classes and in their free time, and their involvement in physical activities is encouraged. The Development Center's sports teachers have extensive experience working with adolescents with mild mental disorders, and educators strive to motivate students to lead an active lifestyle and engage in sports activities.

Conclusions

The results of the study showed that the motor parameters of adolescents with mild mental disorders lag behind the age-specific norm. A characteristic psychophysiological feature of the examined adolescents was the difficulty of concentrating and mobilizing for work. Correlations between individual cognitive and motor developmental indicators were observed. These correlations were more characteristic in the younger group of adolescents with mild mental disorders (11–14-year-old adolescents) than in the older group of adolescents with mild mental disorders (15–16-year-old adolescents). The research showed that the motor and cognitive development of adolescents with mild mental disorders is significantly interrelated.

Physical activities in working with children with mild mental disorders play an important role in the prevention of mental health disorders, as well as in promoting positive mental health.

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OPTIMIZATION OF PHYSICAL AND MENTAL HEALTH OF WOMEN AGED 35–45 WITH SPINAL DISEASES

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ABSTRACT

Degenerative-dystrophic spinal diseases are a common problem among women aged 35–45, significantly reducing their motor activity and quality of life. The article examines the relevance of applying physical exercises to improve the functional state of the spine and reduce the pain syndrome.

The aim of the study is to improve and evaluate the effectiveness of a physical education program for women aged 35–45 with degenerative-dystrophic diseases of the thoracic spine.

Research methods: theoretical analysis and generalization of scientific sources, sociological methods (questionnaires), medical-biological methods, pedagogical observation, and methods of mathematical statistics.

The research results confirmed the effectiveness of the developed physical education program, which consisted of three stages and included exercises, massage, and physiotherapeutic procedures over 14 days. Participants noted a reduction in pain on the Visual Analog Scale (VAS) to 2.3 points, a decrease in the Oswestry Disability Index (ODI) to 11%, and an improvement in spinal flexion amplitude to 163.5°. Quality of life assessment using SF-12 showed an increase in the Physical Health Index (PHI) to 73.6% and the Mental Health Index (MHI) to 78.2%. According to the Ott test, thoracic spine mobility increased to 1.1 cm, and psychological state assessed by the SAN method (well-being-activity-mood), improved to 60 points.

The significance of the research results confirms the necessity of including specialized physical exercises in comprehensive wellness programs for women with degenerative-dystrophic spinal diseases, contributing to the improvement of their functional state and quality of life.

Keywords: *physical exercises, degenerative-dystrophic spinal diseases, women aged 35–45, physical and mental health*

Introduction

In the modern context of increasing physical inactivity, stress factors, and general population aging, degenerative-dystrophic diseases of the spine are becoming particularly relevant as one of the leading medical, social, and economic issues (Afanasiiev, 2018; Zemp et al., 2016). These pathologies primarily affect individuals of working age, significantly reducing their physical activity, psycho-emotional state, and quality of life. Women aged 35–45 represent a particularly vulnerable group, often facing chronic pain syndrome, limited functional capabilities, and mental exhaustion (Burka et al., 2022).

Spinal diseases associated with degenerative-dystrophic changes are often accompanied by damage to the peripheral nervous system. Clinical vertebroneurological manifestations account for 67–95% of peripheral nervous system diseases (Afanasiiev, 2018). Such conditions exacerbate functional impairments and contribute to the development of secondary psycho-emotional disorders, which requires a comprehensive approach to rehabilitation.

Although degenerative-dystrophic processes in the thoracic spine occur less frequently than in the cervical or lumbar regions, they can lead to the most serious complications – such as respiratory dysfunction, restricted chest mobility, upper limb dysfunction, difficulties with self-care, and the development of prolonged neurological syndromes (Heneghan & Rushton, 2015).

Professional literature confirms the effectiveness of physical exercise in reducing the manifestations of degenerative-dystrophic changes in the spine (Waqas et al., 2023; Burka et al., 2022; Divya et al., 2020; Boychenko, 2020; González-Gálvez et al., 2019; Cathcart et al., 2018; Pustovoyt, 2018; Deshevy, 2018; Kormiltsev, 2014). However, in the scientific discourse, insufficient attention has been given to comprehensive physical education programs aimed not only at restoring physical condition but also at optimizing the mental well-being of women in this age group.

Therefore, the aim of our study was to improve and evaluate the effectiveness of a comprehensive physical education program for women aged 35–45 with degenerative-dystrophic diseases of the thoracic spine, with a focus on enhancing both physical and mental health.

Methodology

To achieve the objective of the study, the following methods were employed: theoretical analysis, pedagogical observation, questionnaire, the Ott test, and methods of statistical analysis.

The use of general scientific methods served as the foundation for developing the theoretical basis of the study and substantiating its methodology. These methods helped identify existing gaps in knowledge and emphasized the need for further scientific research in this area. The application of theoretical analysis contributed to the justification of the chosen methods and tools for comprehensive rehabilitation and to the development of

a program, particularly exercises for women with spinal conditions. As a result of detailed analysis and interpretation of the collected data, it was confirmed that the use of physical exercises within our physical education program has a positive impact on the physical and mental state of the participants. This confirmed the relevance of implementing such measures in the practice of comprehensive rehabilitation for women with spinal issues.

A pedagogical observation was carried out. The sample included 10 women aged 35–45 years who, between November 2023 and March 2024, underwent outpatient rehabilitation at the Medical Rehabilitation Center of the Novoyavorivsk Hospital named after Yurii Lypa and participated in a 14-day comprehensive physical education program. The group was formed based on purposive criterion sampling: all participants had diagnosed degenerative-dystrophic spinal diseases (osteochondrosis, kyphosis, thoracic herniated disc) and reported pain in the cervicothoracic region, while remaining in a stable condition without signs of exacerbation. The focus of observation included: the general condition of the women, including visual assessment (facial complexion, sweating, coordination of movements), fatigue levels; behavior and activity during sessions; psycho-emotional state of the participants; relationships between the instructor and the patients; methods of adjusting physical load and their appropriateness to session conditions; technique of exercise performance, the instructor's attention to execution quality, identification of errors, determination of causes, and effectiveness of their correction; methods of participant engagement during sessions and their suitability to the context; physical loads, their nature and intensity, and appropriateness to the age and physical fitness level of the participants; quantitative indicators of exercise performance; and the use of technical teaching aids.

Data on the position of the shoulder girdle, head, and spinal alignment were recorded in the somatoscopic assessment protocol using visual evaluation according to established methodology (somatoscopy in the frontal, sagittal, and horizontal planes). The following parameters were assessed: symmetry of the shoulder girdle, head position relative to the vertical axis, presence and type of spinal curvature (kyphotic, lordotic, or scoliotic), as well as the shape of the chest and scapulae. The obtained findings were taken into account for the individualized selection of exercises, particularly when choosing between symmetrical and asymmetrical movements. To evaluate the effectiveness of the applied methods and techniques, additional consideration was given to psycho-emotional indicators. These were determined through pedagogical observation, noting the presence or absence of willingness to engage in physical activity, as well as manifestations of positive emotions (interest, satisfaction, engagement) or negative ones (fatigue, irritability, reluctance to perform exercises).

At the current stage, questionnaires remain the most common method of surveying. In our study, we used the following tools: the “Medical History Collection” questionnaire, the Oswestry Disability Index, the Visual Analogue Scale (VAS), the SF-12 Health Survey, and the SAN (Well-being, Activity, Mood) questionnaire. The “Medical History Collection” questionnaire included 10 questions and helped to gather general patient information, comorbid conditions, complaints, the localization and nature of subjective

pain sensations, pain duration and frequency, and the presence of factors that aggravate or trigger the condition. The VAS questionnaire was used to assess the participants' subjective perception of pain. The SF-12 allowed for the evaluation of the physical and psychological components of women's health (Ware et al., 1995). The SAN questionnaire provided insight into participants' self-assessment of well-being, activity, and mood (Doskin et al., 1973).

To evaluate the range of motion in the thoracic spine, the Ott test was used. To assess the effectiveness of the improved physical education program, we employed the goniometry method.

Mathematical and statistical processing of the empirical data was carried out using Excel's applied software functions, ensuring the objectivity and reliability of the obtained results.

Results

The improved program we developed involved conducting physical exercise sessions in an outpatient setting, intended for patients in remission or those seeking help for the first time with complaints that do not require inpatient treatment or pharmacological therapy.

The program adhered to the principles of scientific validity, clarity, systematic and sequential progression, accessibility and individualization, patient-centeredness, variety, consistency and progression, age-appropriate adequacy, continuity, and functional orientation – ensuring its effectiveness and alignment with the needs of the patients.

The goal of the comprehensive program was to reduce pain and muscle tone in the affected area; improve range of motion in the shoulder girdle; enhance emotional well-being and quality of life; and establish a lasting habit of physical activity as a lifestyle, which would contribute to the prevention of disease recurrence in the long term.

The structure of the program included three sequential stages: adaptation, training-correction, and stabilization. Each stage involved a gradual increase in the complexity of the rehabilitation process. In accordance with the stated goal, each stage was designed to fulfill specific objectives (see Figure 1).

The program included both mandatory (group-based organization method) and individual sessions. Mandatory therapeutic sessions were conducted five times a week (excluding weekends) over a two-week period. Individual sessions were developed for each patient and consisted of a set of specific exercises. Patients were advised to continue these exercises daily after the completion of the two-week mandatory sessions to maintain the achieved results.

The structure of each therapeutic session followed a classical format and included three parts: preparatory, main, and final. Each session began and ended with exercises aimed at developing the skill of maintaining proper posture and building neuromuscular awareness of it. Additionally, the content of the sessions included a variety of exercises depending on their specific purpose (see Table 1). These included positional therapy

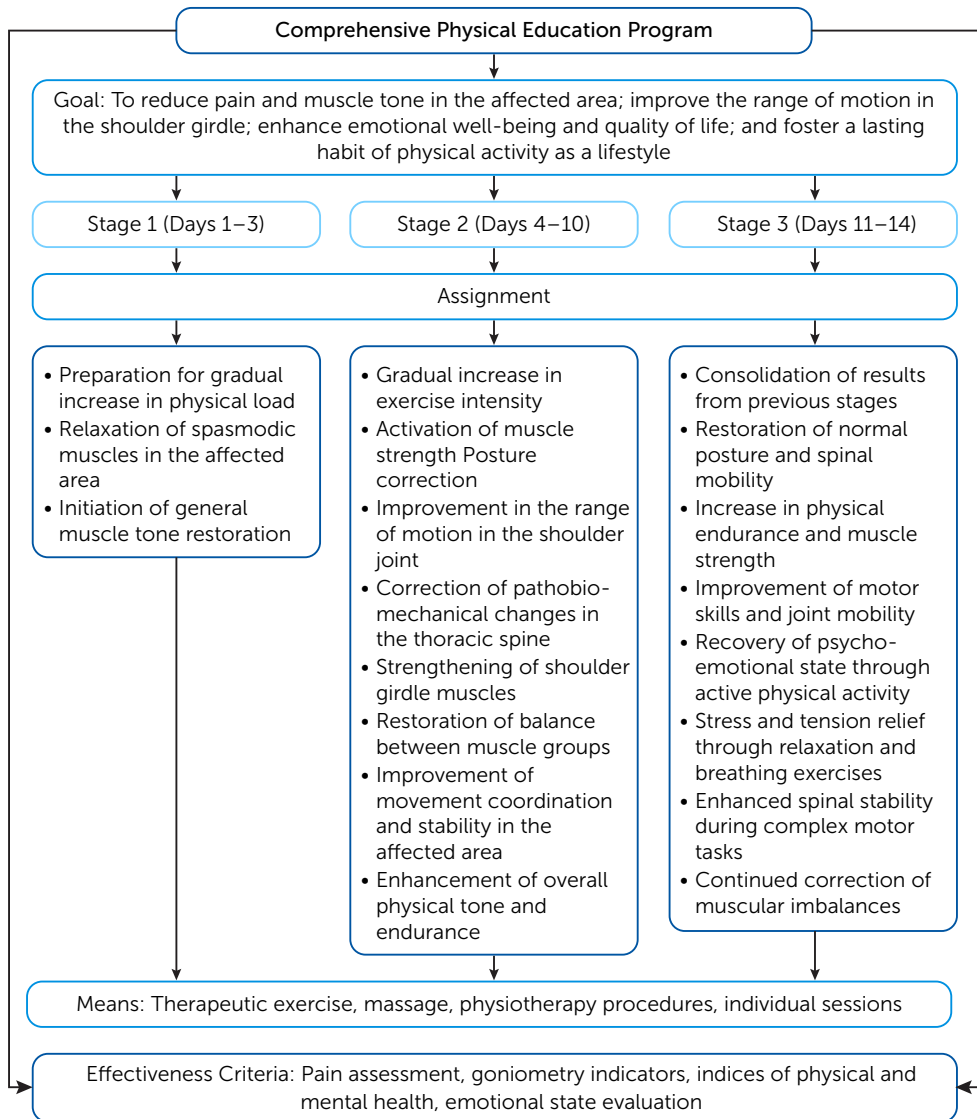


Figure 1 Flowchart of the Comprehensive Physical Education Program for Women Aged 35–45 with Degenerative-Dystrophic Spinal Conditions

exercises (to reduce pain), strength exercises (to strengthen specific muscle groups or the back muscles as a whole), Stretching and relaxation exercises (to improve the range of motion and relax the muscles; myofascial release was used exclusively for the thoracic spine, with a foam roller helping both to relax and stretch the tissues), General developmental exercises (to tone the entire body), Exercises on the Evminov board (broadly applicable, especially useful when the patient’s condition did not allow for active exercises, and also to unload the spine), Walking (a universal method for strengthening muscles and improving the spine’s static function, as well as providing aerobic activity).

Table 1 Indicative Content and Load Dosage in the Comprehensive Physical Education Program for Women Aged 35–45 with Spinal Disorders

Stage 1	Stage 2	Stage 3
Session Duration 45 min	Session Duration 75 min	Session Duration 75–90 min
Intensity: Low Heart Rate: up to 130 bpm	Intensity: Moderate Heart Rate: 130–150 bpm	Intensity: Moderate/High Heart Rate: 150–180 bpm
Range of Motion: Low	Range of Motion: Medium	Range of Motion: Medium/Full
Session Density: 45–50%	Session Density: 50–70%	Session Density: 60–80%
Walking Positional therapy Breathing exercises General developmental exercises Exercises with props Special exercises Corrective exercises Stretching and muscle relaxation exercises Exercises with a medicine ball	Walking General developmental exercises Corrective exercises Special exercises Exercises with additional weights and props Strength exercises for major muscle groups Exercises on the Evminov board Exercises with a medicine ball Stretching and muscle relaxa- tion exercises Wall exercises	Walking General developmental exercises Corrective exercises Special exercises Exercises with additional weights and props Strength exercises for major muscle groups Exercises on the Evminov board Exercises with a medicine ball Stretching and muscle relaxa- tion exercises Wall exercises
Recommended sets of exercises for individual practice Massage Physiotherapy as prescribed		

When necessary, the main exercises were replaced with corrective ones. The purpose of these corrective exercises was to address specific postural deviations (e.g., uneven shoulder height, mild scoliosis, asymmetrical back muscle development, etc.). During sessions, patients were also offered breathing exercises for paced rest, relaxation, and to enhance the effectiveness of general developmental exercises.

Wall exercises supported mobilization of the shoulder joint, strengthening of muscles, and mobilization of the thoracic spine.

After completing the physical education course, a follow-up assessment was conducted to evaluate the effectiveness of the developed program.

A repeated assessment of back pain using the Oswestry Disability Index (ODI) showed a reduction in the index from 14% to 11% (see Table 2). Although both values fall within the same category of functional condition, the quantitative decrease indicates positive dynamics and an improvement in the patients' condition. This is particularly important considering that an index above 20% is already considered critical and may indicate a risk of disability.

The effectiveness of the program is also confirmed by a 2.3-point reduction in pain intensity on the Visual Analogue Scale (VAS). After the sessions, the average score was 2.3 ± 0.4 points, corresponding to mild pain syndrome. The reduction in pain is attributed to the comprehensive impact of the physical education program.

Table 2 Indicators of the Effectiveness of the Comprehensive Physical Education Program for Women with Spinal Disorders ($n = 10$)

Indicator	Before Implementation of the Program	After Implementation of the Program
Back pain (Oswestry Disability Index), %	14	11
Back pain (Visual Analogue Scale), points	4.6 ± 0.9	2.3 ± 0.4
Thoracic spine mobility (Ott test), cm	0.8 ± 0.3	1.1 ± 0.2
Goniometry, degrees	154.5 ± 4.6	163.5 ± 3.6
Physical Health Index, %	60	73.6
Mental Health Index, %	64.5	78.2
Emotional state, points	48 ± 7.3	60 ± 4.0
Well-being, points	43 ± 2.4	62 ± 2.7
Activity, points	44 ± 2.1	56 ± 1.2
Mood, points	58 ± 1.7	63 ± 3.2

In addition, after completing the physical education course, improvements in motor performance were recorded. Specifically, the range of arm flexion in the shoulder joint, according to goniometry, increased by 9° and reached 163.5°. Mobility in the thoracic spine reached 1.1 cm – a value that corresponds to the lower limit of the normal range.

A follow-up questionnaire made it possible to track the positive dynamics in changes in the physical and mental health indices of the patients. According to the data obtained, the physical health index increased from 60% to 73.6%, and the mental health index from 64.5% to 78.2%. The improvement in physical health was due to an increase in the following indicators: physical functioning – by 15%, role functioning – by 15%, reduction in physical pain – by 20%, and general health status – by 5%.

The increase in the mental health index occurred due to improvements in: vitality – by 18%, emotional functioning – by 10%, social functioning – by 32%, and mental health – by 28%.

After completing the pedagogical observation, a repeated assessment of the women's emotional state using the SAN method was also conducted. Improvements were recorded in all studied parameters. Specifically, the average mood score was 63 points, well-being – 62 points, and activity – 56 points, indicating high results across all parameters.

Only 30% of the women rated their activity at 44 points (average level), while 70% were within the high level range. A comparison of initial and final scores shows: an increase in well-being from 43 to 62 points, activity – from 43 to 56 points, and mood – from 58 to 63 points.

The overall assessment of emotional state also improved: from 48 points at the beginning to 60 points at the end of the pedagogical observation.

Thus, the proposed physical education program for middle-aged women with spinal disorders proved effective across all studied criteria. It contributed to reducing pain syndrome, improving motor activity, physical and psycho-emotional state, which altogether had a positive impact on the quality of life of the study participants.

Discussion

The obtained results confirm the effectiveness of the proposed physical education program for women aged 35–45 with degenerative-dystrophic spinal diseases. A decrease in pain levels according to the Oswestry Disability Index (ODI) and the Visual Analogue Scale (VAS), along with improved functional indicators and flexibility, indicate positive dynamics in the physical condition of the participants.

These findings are consistent with previous research demonstrating the positive effects of comprehensive physical activity on spinal health and emotional state in individuals with similar conditions (Yaroshyk et al., 2012; Kormiltsev, 2014; Deshevy, 2018; Taratukhina, 2019; Divya et al., 2020; Burka et al., 2022; Waqas et al., 2023).

The main hypothesis of the study was that an improved physical education program could positively influence the physical and mental health of women with spinal diseases. The study results confirmed this hypothesis: we observed a reduction in pain, an increase in physical and mental health indices, improved mobility in the thoracic spine, and an overall positive dynamic in the condition of the patients after completing the physical education course.

In particular, the increase in physical and mental health indices demonstrated in our study indicates that a comprehensive approach combining physical exercises and therapeutic methods is an effective means for improving the quality of life for women of this age group. Additionally, the positive changes in the women's emotional state confirm the importance of incorporating physical activity to support mental health in such patient populations.

Despite the positive results, this study has certain limitations. Firstly, the sample included only 10 women, which may affect the generalizability of the findings. A larger sample size would allow for more reliable and valid results and would also enable the consideration of a greater variety of factors, such as participants' initial physical fitness levels, individual physiological characteristics, and the presence of comorbidities.

Secondly, the follow-up period after completing the physical education program was limited to only a few weeks, which does not allow for an assessment of the long-term effects of the intervention. A more extended observation period is necessary to fully evaluate the effectiveness of the program and identify both short-term and long-term changes in patients' conditions.

Given the results of this study, further scientific work is recommended to improve physical education programs for women with spinal disorders. It is important to conduct studies with larger sample sizes to assess the program's applicability and effectiveness across different patient groups. Additionally, research should investigate the impact of program duration on outcomes and explore any potential adverse effects of physical activity for this demographic.

Future studies may also consider individual characteristics of the participants, such as age, baseline physical activity levels, and the presence of comorbidities. This would enable a more personalized approach to designing physical education programs for this

category of patients. Such considerations are particularly important for middle-aged women, who often face psychological challenges related to bodily changes and social role transitions.

Conclusions

In conclusion, the results support the relevance of a comprehensive approach to rehabilitation for women aged 35–45, combining elements of physical education, psycho-emotional support, and functional recovery. It is recommended to implement similar programs in the practice of physical education specialists, rehabilitation therapists, and fitness instructors working with women in this age group.

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FORMATION OF AN ACCESSIBLE SPORTS ENVIRONMENT IN THE CITY OF LVIV: INFRASTRUCTURE DIMENSION

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ABSTRACT

The article examines the role of sports infrastructure in the formation of inaccessible sports environment, as one of the key areas of sustainable development of a modern city, since ensuring equal access to sports infrastructure contributes to social integration, improving the quality of life and strengthening the health of the population.

The work aims to investigate the accessibility of sports infrastructure in the city of Lviv, to consider existing barriers and opportunities for its improvement. It has been established that the sports infrastructure of the city of Lviv consists of 14 stadiums; 15 swimming pools; 10 sports complexes; 4 bases of Olympic, Paralympic and Deaflympic training; 375 sports grounds; 6 shooting ranges, one shooting stand, archery range; 183 sports halls and a bicycle track. An analysis of the location of the city's sports infrastructure indicates an uneven provision of such facilities in its various districts. The formation of an accessible sports environment in Lviv is an important step towards creating equal opportunities for people with disabilities, but in order to fully realize this potential, it is necessary to overcome barriers in accessibility, financing and social support.

The results of the analysis of the pedestrian accessibility of sports facilities showed that the best-equipped districts are Halytskyi (98.1% of residential buildings within a 500 m accessibility zone), Frankivskyi (95.8%) and Sykhivskyi (83.6%). At the same time, the lowest indicators were recorded in Zaliznychny (74.3%), Lychakivskyi (67.6%) and Shevchenkovskyi (64.7%) districts, which indicates limited spatial integration of sports infrastructure in these parts of the city.

Adaptive sports in Lviv are actively developing; evidence of this is the holding of numerous sports competitions, including the national qualifying stage of Invictus Games 2023 and the All-Ukrainian Adaptive Competition Best Strong Games 2024. Sports facilities hosting such competitions are becoming increasingly accessible, however, other sports facilities need to be modernized to increase their accessibility by installing special lifts, ramps, handrails, bathrooms adapted for people with disabilities, etc.

Keywords: *sports environment, sports infrastructure, adaptive sports, accessibility, Geographic Information System, spatial analysis*

Introduction

Creating an accessible sports environment plays an important role in the sustainable development of a modern city, as ensuring equal opportunities for using sports infrastructure contributes to social cohesion, improving the quality of life and maintaining the health of residents (Wibowo et al., 2025). The issues of accessibility of urban sports infrastructure, its assessment and the development of adaptive sports are relevant in the context of the formation of an accessible urban sports environment (Declerck et al., 2021).

Considering the problems of forming the image of the city, we note that in the city various spheres and types of human activity are combined (integrated) and concentrated in close territorial proximity (Fitri et al., 2022). This occurs in conjunction with the development of social processes in the city, which are associated with the general progress of social development. In the city space there are objects that unite the entire urban community – from young people to the elderly. Such objects in the city are elements of sports infrastructure (Yi et al., 2022).

Sports infrastructure is a set of sports facilities, objects and organizations that are intended for the implementation of physical education, sports and recreational and health activities (Samoilenko, 2019). It includes stadiums, swimming pools, fitness centers, gyms, playgrounds and many other objects.

Lviv is one of the key centers of medical, physical and social rehabilitation in Ukraine. Rehabilitation centers are already operating in the city, but their integration with modern sports infrastructure remains limited. Access to quality sports facilities adapted for people with different physical abilities is critically important not only for physical recovery, but also for the psychological rehabilitation of veterans (Nazaruk & Khudoba, 2022).

In this study, the accessibility of the sports environment is considered as the provision of city residents with sports infrastructure and its barrier-freeness. In the conditions of a full-scale war in Ukraine, where adaptive sports activities are used to rehabilitate war veterans and military personnel who have suffered injuries and traumas as a result of hostilities, this problem becomes even more relevant (Plan of sustainable urban mobility of Lviv, 2020).

This work aims to investigate the accessibility of sports infrastructure in the city of Lviv, to consider existing barriers and opportunities for its improvement (Sá et al., 2012).

Methodology

In the process of research, the cartographic method was applied, in particular, the construction of maps of the geospatial location of sports facilities within the city of Lviv. To ensure the complexity of the analysis, general scientific methods were also used, in particular, induction and deduction, which allowed combining empirical observations with theoretical generalizations. In order to quantitatively assess the sports infrastructure, statistical and mathematical methods were used, which made it possible to determine and analyze quantitative indicators of the functioning of sports facilities (Imas et al., 2022).

This study applied a comprehensive approach to spatial assessment of the accessibility of sports infrastructure in the city of Lviv using geographic information technologies. The analysis has been conducted in the ArcGIS 10.3 environment using both vector and raster spatial modeling methods. At the first stage of the study, the transport accessibility of the city's stadiums has been analyzed, which was carried out using the Service tool Area of the Network module Analyst. Based on the vector layer of the street and road network, a Network was created Dataset, which allowed modeling the reach ability zones of stadiums within 5, 10, 15 and 20 minutes of car travel. The resulting isochronous zones reflect the real accessibility of sports facilities, taking into account the structure of the transport network.

Kernel Density Estimation (KDE) method has been used to estimate the density of sports facilities in the city of Lviv. This tool allows identifying spatial clusters of sports infrastructure concentration based on the number of facilities within a certain search radius (Ryśnik & Gibas, 2019; Xiao, & Wang, 2022). In this study, the search radius was set at 1000 meters, which allows taking into account the influence of facilities within walking and short transport reach. KDE allows assessing not only the presence, but also the intensity of distribution of sports facilities in different areas of the city, which is important for spatial planning and identification of underserved areas (Gao et al., 2022).

The pedestrian accessibility of micro district sports facilities (sports stadiums and gyms, sports grounds) for residents of the city of Lviv has been assessed by analyzing the location of residential buildings in relation to these facilities. The spatial layer of residential development has been obtained from OpenStreetMap and pre-processed to select only those objects that are classified as residential (types: apartments, detached, house, residential, etc.). A buffer zone with a radius of 500 meters has been created around each sports facility, which corresponds to the conditional pedestrian accessibility zone. Using the Spatial tool Join determined the number of residential buildings falling within these zones for each district of the city. Based on this, the percentage of residential buildings provided with sports infrastructure at the district level was calculated.

Thus, the selected methods – transport modeling, spatial density analysis, and pedestrian accessibility – in combination allow for a multidimensional assessment of the spatial organization of Lviv's sports infrastructure and its accessibility for residents.

Results

Sports facilities contribute to the active development of physical culture and sports in Lviv, acting as an important component of the accessible space of the city. It is of great importance; especially during the social changes that occur in society, as a result of which the needs for rehabilitation and physical culture and health activities of the population increase. Also, the city's sports facilities are of great importance for the development of event tourism, as they provide for the holding of various cultural and sports events that are visited by tourists and fans from different parts of the world. International sports tournaments contribute to the development of not only sports, but also the city's

infrastructure in general and bring significant revenues to local budgets and profits, especially for service enterprises. Evidence of this is the 2012 European Football Championship, during which Ukraine visited a large number of foreign tourists and fans.

Sports complexes of universal or specialized purpose form their centers in the city space, serving a certain territory of it. City-wide sports facilities serve the needs of the urban population, and most often serve large competitions of the city, regional, inter-regional and international levels. Such facilities are usually called structures of episodic use. This includes open playgrounds for games, athletics grounds, and open water sports facilities. Such facilities mostly require large areas and convenient transport connections for quick service of participants – athletes and spectators. This is especially true for complexes where large international competitions are held (Nazaruk, M., & Khudoba, V., 2022).

The analysis of social factors shows that one of the important aspects that influence the geospatial features of the formation of the city's sports environment is the needs of visitors. Visitors put forward certain requirements for the sports environment intended for training and recreation. The frequency of visits to sports and recreation facilities by the urban population is quite high, due to the high health and recreational potential of the city (Grabski et al., 2013).

The sports infrastructure of Lviv is represented by 14 stadiums, 15 swimming pools, 10 sports complexes, 4 bases for Olympic, Paralympic and Deaflympic training, 358 sports grounds, 183 sports halls, 6 shooting ranges, one shooting stand, an archery range and a cycling track (Table 1).

A significant role in the sports environment of Lviv is played by 14 stadiums, including Arena Lviv, Ukraina, Skif, SKA and others. Stadiums are those sports facilities where mass sports events of city, all-Ukrainian and international importance are held. Unfortunately, today the security situation that has developed due to the full-scale invasion of the Russian Federation on February 24, 2025 into the territory of Ukraine does not allow holding sports events of international importance at the city's stadiums.

The largest and newest stadium in the city is Arena Lviv, which is designed for 34,915 spectators. The stadium was built to host matches of the 2012 European Football Championship. Arena Lviv ranks 4th in Ukraine in terms of the number of seats for spectators. In addition to football matches of regional, national and international importance, Arena Lviv hosts various sports and cultural events.

No less important is the "Ukraine" stadium, located near the central part of the city, designed for 28,051 seats. The "Arena Lviv" and "Ukraine" stadiums are used as sports facilities for high-level football matches.

The oldest among the existing stadiums in Lviv is the "Skif" stadium. The stadium has 3,742 seats. Today it is a complex sports facility of the Ivan Bobersky Lviv State University of Physical Culture "Skif". The stadium played an important role in the sports and cultural life of the city in the first third of the 20th century, and entered the history of Polish interwar sports. Despite the construction of more advanced sports facilities in the post-war period, the stadium was popular and became the property of the Institute of Physical Culture.

Table 1 Sports infrastructure of Lviv districts

Sports infrastructure	Galician	Railway	Lychakivskyi	Sykhivskyi	Frankivskyi	Shevchenkovskyi	Lviv
Stadiums	1	1	3	2	4	3	14
Swimming pools	1	1	4	2	3	4	15
Shooting ranges	1	–	1	–	1	4	7
Sports grounds, <i>including</i>	56	92	91	113	94	981	375
<i>football fields</i>	11	29	18	40	40	26	164
<i>basketball courts</i>	8	12	11	11	6	4	52
<i>playgrounds equipped with exercise machines</i>	6	9	8	16	10	8	57
Children's and youth sports schools	8	1	3	2	5	3	22
Sports clubs	9	14	6	9	10	10	58
Bases of Olympic, Paralympic and Deaflympic training	1	–	–	1	1	2	4
Olympic training centers	–	–	–	–	–	1	1

After the establishment of the Institute of Physical Education in Lviv (1946), the stadium became an athletics base for the educational and training process of students. Before the 2012 European Football Championship, the stadium was reconstructed; it was to be one of the training bases of the tournament. From 2018 to 2020, work continued on the arrangement of athletics running tracks. Arrangement of the tracks is an important step towards the reconstruction of the stadium and sports complex of the Ivan Boberskyi Lviv State University of Physical Culture. The reconstruction of the stadium contributes to the holding of international athletics competitions in the Lviv region, since in November 2021 the Skif stadium became a certified second-category athletics stadium. Also, sports competitions of various levels are held at the Skif stadium in order to attract people with disabilities to sports, one of the largest in 2023. There were sports competitions among wounded servicemen – the All-Ukrainian Games of the Invincible.

SKA is a multifunctional stadium, which is part of the summer sports training base of the Ministry of Defense of Ukraine. The complex includes a stadium with a football field, speedway tracks and spectator stands, an indoor swimming pool, a group of premises for shooting and pentathlon, a riding arena, a cycling track and an administrative building. This sports complex is very often used as a base for various kinds of adaptive sports competitions.

The Frankivsk, Lychakiv and Shevchenkivskyi districts are the best equipped with stadiums, while the Halytskyi and Zaliznychnyi districts have the fewest (Table 1). Arena Lviv, Ukraine, Skif and Yunist stadiums host sports competitions, while other stadiums in the city are used both for sports competitions and for training athletes and city residents.

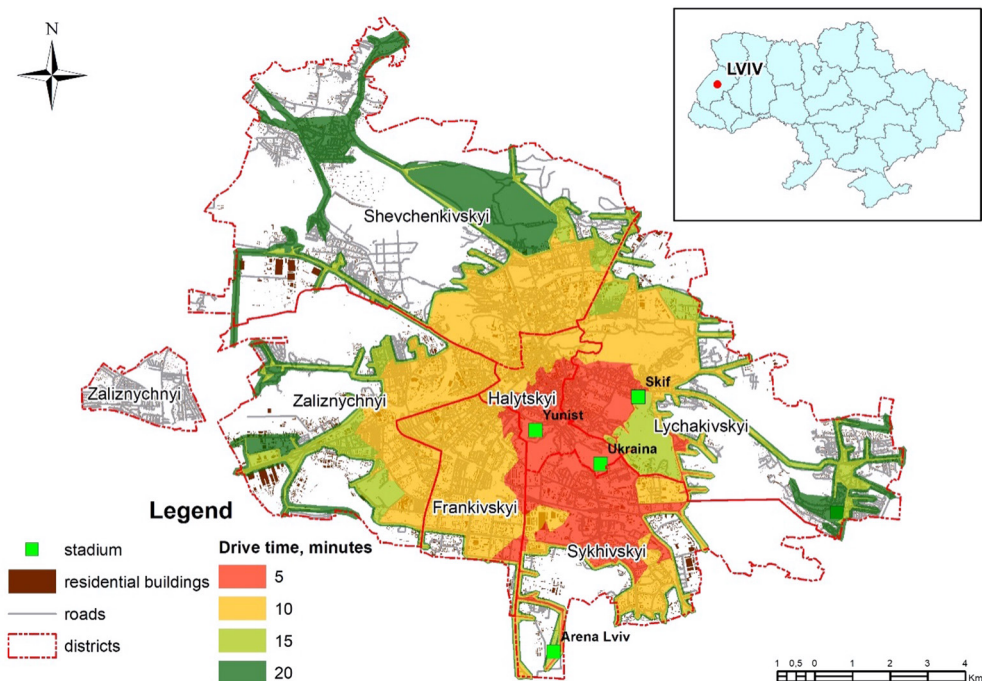


Figure 1 Transport accessibility of stadiums in Lviv

Analyzing the location of these stadiums in the city space, it can be noted that most of them are located closer to the central part of the city than to the periphery (Fig. 1). The model of time areas of accessibility by road transport that we simulated shows that under ideal conditions (movement with an average speed of 50 km/h without traffic jams) residents and guests of the city who are located in the Halytskyi and Sykhivskiyi districts will spend the least time to get to the Ukraina, Skif and Yunist stadiums.

Stadiums in the central part of the city (Yunist, Ukraina) have the best accessibility due to their location in the Halytskyi district – most city residents can reach them in 10–15 minutes. The Skif stadium in the Lychakivskiyi district is convenient for the eastern part of the city, but for the western districts the journey takes up to 20 minutes. Arena Lviv, located in the south in the Frankivskiyi district, is the least accessible: it is convenient only for residents of the Frankivskiyi and Sykhivskiyi districts, while for Shevchenkivskiyi and Zaliznychnyi the journey can take more than 20 minutes. In general, stadiums in the central part provide the best access for most Lviv residents, while more distant stadiums, such as Arena Lviv, are less convenient for a significant part of the city, especially for the outskirts of the Zaliznychnyi and Shevchenkivskiyi districts.

Inter-district and district sports facilities are designed to meet the periodic needs of citizens, and their accessibility radius does not exceed 1000 m, which corresponds to the location of these institutions in the center of residential areas. Such facilities periodically host competitions of various levels, operate specialized and universal sections.

These facilities are called facilities for periodic use. We include other stadiums, swimming pools, sports complexes, etc.

There are 15 swimming pools in Lviv, located throughout the city, however, the largest number of them is located in the Lychakiv, Shevchenkivskyi and Frankivskyi districts. The most functional and popular include the pools of “SKA”, “Dynamo”, “Eurosport” and the pools of the “Sportlife” club.

In recent years, the city has been actively restoring swimming pools in schools and preschool departments. Children have the opportunity to learn to swim during physical education classes.

There are about 50 thousand people per swimming pool in Lviv. The residents of Lychakiv district, where there are four swimming pools, have 26 thousand people per pool, and the residents of Shevchenkivskyi district, where there are also four swimming pools, have 35 thousand people per pool. The residents of Zaliznychny district, where one pool provides for 120 thousand people, and Sykhivskyi district, where one pool provided for 75 thousand people, are the least provided with swimming pools; therefore, in these districts it is necessary to build additional new swimming pools with accompanying infrastructure to meet the needs of the population of these districts (Nazaruk, M., & Khudoba, V., 2022).

In the city space, an important place belongs to micro district sports facilities, including sports grounds, small gyms that serve the local population every day and satisfy people's daily needs. The radius of accessibility of such facilities is 500 m, which corresponds to their location in a residential area, in micro districts and residential groups. In total, there are 358 sports grounds in Lviv (Table 1). Among them, football fields, volleyball and basketball courts, grounds equipped with exercise machines, table tennis tables, and recently there has been an increase in the number of complex sports grounds where you can train in various sports.

The sports grounds are located in all districts of Lviv, but the largest number of them is concentrated in Sykhivskyi – 113, Shevchenkivskyi – 98, Frankivskyi – 94 and Zaliznychnyi district – 92 sites, and the smallest number is in Halytskyi district – 56 (Table 1). However, if we analyze the ratio of the number of sports grounds to the area of the district, the best-equipped districts are Halytskyi district – 7 units per km² and Frankivskyi 6 units per km², the lowest indicators are Shevchenkivskyi district – 1 one sports ground per km². Spatial analysis of the concentration of sports facilities in the city was performed using the kernel density estimation method (Kernel Density Estimation, KDE). This method allowed us to estimate the intensity of the distribution of sports facilities, taking into account their location and density in certain areas of the city (Fig. 2).

The highest concentration of sports facilities is concentrated in the central part of Lviv, while the low concentration is characteristic of the outskirts, which indicates limited accessibility of sports infrastructure in the peripheral areas of the city. Figure 2 shows areas with high and very low concentration of sports facilities in each district of the city. This is due to both the location of sports infrastructure and the territorial organization of the entire urban space. Residents of the central part of the city, in particular residents of the Halytskyi and Frankivsk districts, have the best accessibility to sports infrastructure.

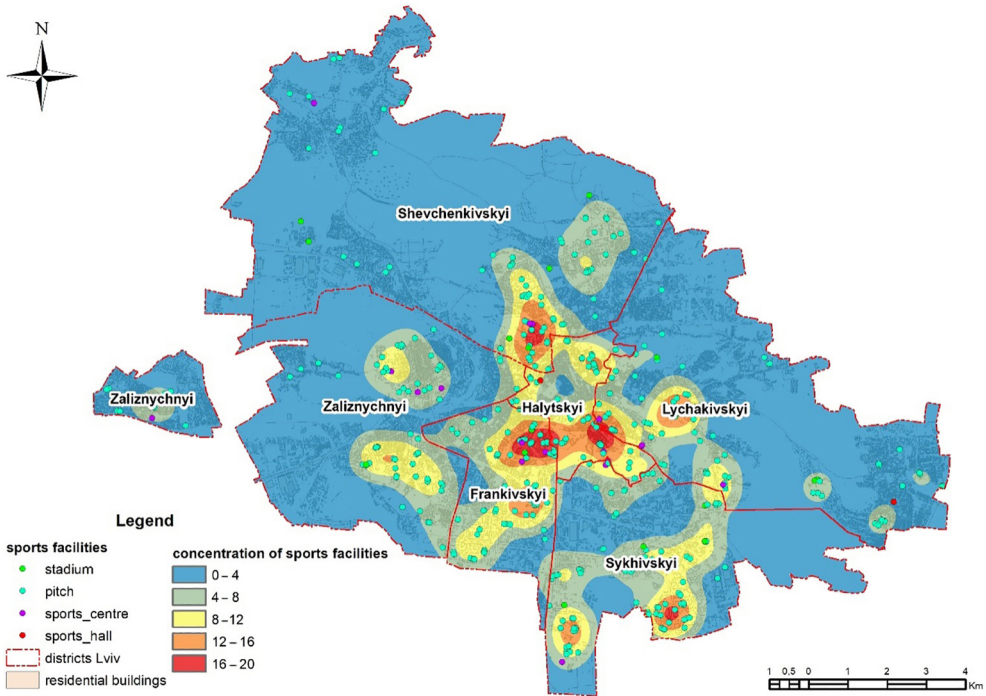


Figure 2 Concentration of sports facilities in areas with a radius of 1 kilometers (KDE – Kernel density estimation)

There are about 2,000 people per sports field in Lviv. The residents of the Halytskyi district are best provided with sports fields, with 1,000 people per sports field. The residents of the Shevchenkivskiy district are least provided with sports fields, with one field for 2,700 people.

The spatial accessibility of microdistrict sports facilities for Lviv residents was assessed by analyzing the location of residential buildings relative to the specified facilities, since the level of accessibility directly depends on their proximity to residential development. Analyzing the intersection of the layer of residential buildings with a 500 m zone around sports facilities made it possible to determine the number of residential buildings located within this zone for each district (Fig. 3).

Based on the obtained values, the percentage of residential buildings in each district of the city with access to sports infrastructure was calculated, which allows us to assess the spatial unevenness of the provision of sports facilities.

As a result of the analysis of pedestrian accessibility of sports facilities within a 500-meter buffer zone from residential buildings, significant variability in provision between administrative districts of Lviv was established. The highest level of accessibility is observed in the Halytskyi district, where 98.1% of residential buildings are located within 500 m from a sports facility. High indicators are also recorded in the Frankivsk (95.8%) and Sykhiv (83.6%) districts. Slightly lower values are recorded in the Zaliznychnyi (74.3%),

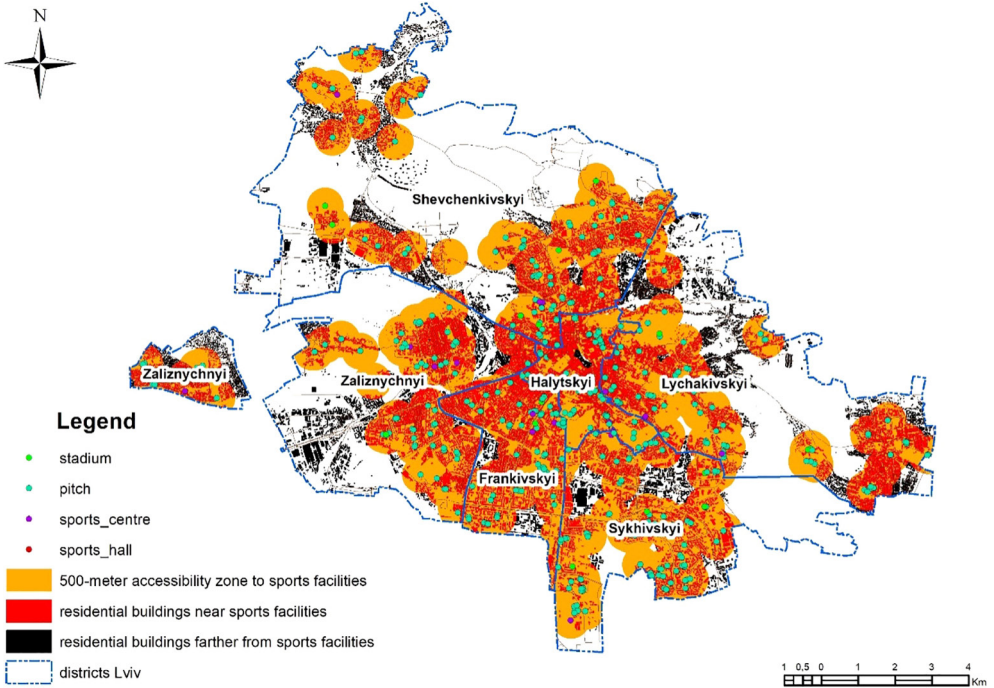


Figure 3 Geospatial analysis of the accessibility of sports infrastructure in the city of Lviv

Table 2 Characteristics of pedestrian accessibility of sports facilities in Lviv districts

Area	Number of sports facilities	Density of sports facilities per km ²	% of residential buildings within 500m of sports facilities
Galickyi	56	8.6	98.1
Sykhivskiy	113	4.5	83.6
Frankivskiy	94	8.4	95.8
Shevchenkivskiy	98	1.7	64.7
Lychakivskiy	91	2.5	67.6
Zaliznychnyi	92	2.6	74.3
LVIV	375	2.7	72.0

while the lowest indicators are demonstrated by the Lychakiv (67.6%) and Shevchenkivskiy (64.7%) districts, which indicates the need to improve the accessibility of sports infrastructure in these parts of the city (Table 2).

To determine the current state and provision of sports infrastructure in the city of Lviv, a sociological survey of its residents was conducted. 294 respondents took part in the survey, including 58.3% men and 41.7% women. The survey covered responses from different age groups, where 25% of respondents are aged 35–45, 21.7% – 45–60, 18.3% – 25–35, 16.7% are under 18. Respondents represent all districts of the city, in particular Shevchenkivskiy

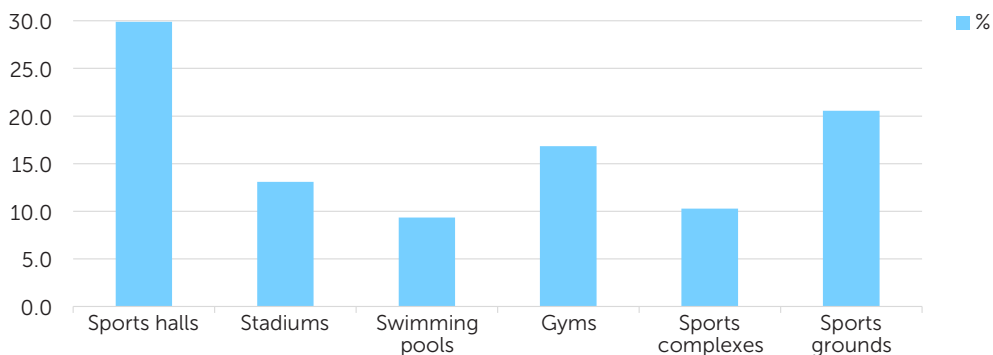


Figure 4 Use of sports infrastructure by residents of the city of Lviv

district – 40%, Lychakivskiyi – 17%, Sykhivskiyi – 15%, Zaliznychniyi and Frankivskiyi – 10% each, respectively, Halytskyi – 8%. 90% of respondents use the city’s sports infrastructure, but the frequency of its use varies. 56.7% of respondents use sports facilities several times a week, 17% less often than once a week, and only 16% visit such facilities every day. For physical education and sports activities, respondents prefer gyms, sports grounds, and exercise rooms, and swimming pools are the least visited in Lviv (Fig. 4.).

About half of the respondents believe that the level of accessibility of the city’s sports infrastructure is satisfactory, for 28% it is good, 12% excellent, but for 10% it is bad. According to the survey results, the condition of sports facilities (in particular, cleanliness, availability of equipment and level of technical support) was assessed by 43% of respondents as satisfactory. Good condition was noted by 39% of the respondents, while 10% consider it unsatisfactory. Only 8% of respondents described the condition of sports facilities as excellent.

An important characteristic of the urban sports environment is the accessibility of sports infrastructure for people with disabilities. This issue is of particular importance in modern conditions, when as a result of the armed aggression against Ukraine, there is an increase in the number of people with musculoskeletal disorders, in particular after amputations. Ensuring barrier-free access to sports facilities is not only a matter of social justice, but also an important step towards the rehabilitation, integration and improvement of the quality of life of those affected. Therefore, assessing the accessibility of sports infrastructure should include not only spatial indicators, but also aspects of physical accessibility for low-mobility population groups.

To create a barrier-free urban environment in Lviv, the city’s infrastructure is undergoing significant modernization and adaptation. This process covers various sectors, including sports infrastructure, which is being improved to ensure accessibility and inclusion. However, there are a number of problems that hinder the creation of a barrier-free sports environment in the city of Lviv, including:

- insufficient number of ramps and other means of accessibility for people with disabilities;
- lack of special equipment for people with special needs to do sports;
- insufficient number of sports programs for people with special needs;

- lack of funding for infrastructure modernization;
- poor condition of roads and sidewalks near sports facilities;
- low awareness of staff about the needs of people with disabilities.

Solving these problems will contribute to the development of inclusive sports facilities in Lviv. By implementing the principles of universal design, Lviv strives to create environments that are comfortable for people with different abilities, promoting social inclusion and popularizing a healthy lifestyle, but also contributing to the development of adaptive sports. Adaptive sports are an important method of socialization of people with disabilities. They help overcome post-traumatic stress disorder, restore self-confidence and integrate former military personnel into society. This contributes to the creation of an extensive network of adaptive clubs and the provision of conditions for practicing one or another sport by war veterans and people with disabilities, depending on their interests and preferences. In the past 2024, the number of such clubs in Ukraine increased from 10 to 85, which indicates the need for such services. Such clubs offer swimming, fitness, archery, rugby, golf and other sports.

One of such institutions engaged in the development of physical culture and adaptive sports in Lviv is the Lviv Regional Center for Physical Culture and Sports for People with Disabilities “Invasport” – a center that works to popularize an active lifestyle and involve people with disabilities in professional and amateur sports. The center provides the opportunity to engage in athletics, swimming, table tennis, football, alpine skiing, wheelchair basketball, powerlifting, chess and checkers. In 2024, in Lviv, “Invasport” was a co-organizer of more than 30 sporting events in which about a thousand people with disabilities from different regions of Ukraine took part.

Adaptive sports in Lviv are actively developing; evidence of this is the holding of numerous sports competitions, including the national qualifying stage of Invictus. Games 2023 and the All-Ukrainian Adaptive Competition Bestrong Games 2024. Sports facilities hosting such competitions are becoming increasingly accessible, however, other sports facilities need to be modernized to increase their accessibility by installing special lifts, ramps, handrails, bathrooms adapted for people with disabilities, etc. (Fig. 5).



Figure 5 Accessibility of the athletics arena of the summer sports training base of the Ministry of Defense of Ukraine and the holding of the “Warriors’ Cup” in archery

Today, to improve its accessibility, sports infrastructure in Lviv city mainly equipped with sidewalk ramps and accessible toilets, less so with ramps. However, the biggest problems are with the provision of special lifts, elevators, and other assistive technologies.

Conclusions

Modern Lviv is in an active stage of development due to private investments in real estate. Many territories are being developed, housing is being built, commerce is developing, but unfortunately, it is practically not provided with appropriate sports infrastructure, which does not contribute to the quality of the living environment in the city.

The results of the study showed significant spatial unevenness in providing Lviv residents with access to sports infrastructure. An analysis of the pedestrian accessibility of sports facilities within 500 meters revealed that the best-equipped districts are Halytskyi (98.1% of all residential buildings are located in this accessibility zone), Frankivskyi (95.8%) and Sykhivskyi (83.6%). In contrast, the Shevchenkivskyi (64.7%), Lychakivskyi (67.6%) and Zaliznychnyi (74.3%) districts have the smallest number of residential buildings within accessibility, which indicates insufficient spatial integration of sports facilities in these parts of the city.

The study identified areas with a high concentration of sports facilities, in particular the central part of the city, which is associated with historical development and a dense infrastructure network. At the same time, some peripheral areas are insufficiently provided with sports infrastructure, which emphasizes the need to develop targeted programs for the development of sports infrastructure in these areas.

Barrier-free sports infrastructure is of particular relevance in today's conditions. The increase in the number of people with disabilities as a result of the war requires new standards of inclusion from the urban environment. The creation of accessible sports facilities for all categories of the population, including low-mobility groups, should become a priority in the process of further spatial planning and rehabilitation policy of the city of Lviv. In general, the results of the study emphasize the need for an integrated approach to the development of sports infrastructure, focused on uniform coverage of the city's territory, social inclusion and spatial accessibility of sports infrastructure for all residents of the city.

Creating conditions for city residents to actively spend their leisure time, including using the resources of mass sports and physical culture, is a key area of activity for authorities at all levels in solving the problems of forming a healthy lifestyle for the population and the quality of the living environment in the city. The use of sports infrastructure will contribute to the implementation of recreational, health, educational, and communicative functions and is an important means of developing city residents and human potential.

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BIOMECHANICAL ANALYSIS OF CRAWL SWIMMING BY TOTAL IMMERSION METHOD

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ABSTRACT

The ability to swim effectively and economically is of great importance for the safety of water recreation, the performance of rescue and military operations, the intensification of physical activity and the improvement of various population groups, etc. Promoters of the popular crawl swimming method using the full immersion method declare its higher efficiency and economy compared to the classic crawl. Such a statement requires an objective comparison of the main biomechanical characteristics of the mentioned swimming methods, which have not been sufficiently studied for the first method.

The aim of the study was to determine the main biomechanical characteristics of crawl swimming using the full immersion method and compare them with the corresponding characteristics of the classic crawl.

To achieve the set goal, underwater video recording with a frequency of 120 Hertz, its computer biomechanical analysis, as well as methods of comparison and statistical processing of the obtained data were used.

The features of the phase structure of the swimming cycle in the specified method and the limit poses of the swimmer in different phases were studied and analyzed, the nature of the change in the instantaneous horizontal swimming speed during the cycle was calculated, the nature of the change in the driving force in the cycle and the reasons for such changes were revealed. The work of the legs and its synchronization with the work of the hands were described, the movement of the center of mass of both hands and the change in the cycle of the mutual location of the centers of mass and body buoyancy were calculated, the length and frequency of strokes, swimming speed, stroke quality, etc. were determined.

Comparison of the biomechanical characteristics of swimming with a crawl by the method of full immersion and the traditional method objectively confirms the higher efficiency and economy of the first due to an increase in the length of strokes, a decrease in their frequency and a decrease in hydrodynamic resistance to movement, as well as a lower variation of the instantaneous speed of movement in the cycle of fixed points on the trunk and the center of mass of the body.

The results of the biomechanical analysis of swimming "crawl" with a full immersion method confirmed its higher efficiency compared to the classic crawl. Its application in applied and recreational swimming is expected to increase the attractiveness and safety of water recreation, as well as the effectiveness of rescue, military or other operations involving swimming.

Keywords: *applied swimming, biomechanical analysis, crawl, intra-cycle speed fluctuations, phase composition of the swimming cycle, total immersion method*

Introduction

Today, it is difficult to overestimate the role of physical activity, sports and tourism, and especially military-applied sports, in strengthening the health of the population, educating young people and preparing them to defend the Fatherland. Due to its educational, applied, sports and health-improving value, swimming occupies a prominent place. Systematic swimming lessons contribute to the development of all physical qualities and increase a person's working capacity. Swimming has a particularly beneficial effect on the cardiovascular and respiratory systems. People who regularly swim have increased muscle strength and increased functional capabilities. Swimming skills are the basis of sports and military-applied swimming, water polo, diving, artistic swimming, modern pentathlon, underwater sports, marine, applied and other types of military and special all-around sports. Applied swimming is successfully used in the treatment of metabolic diseases, in the initial stages of diseases of the respiratory and cardiovascular systems, in scoliosis, to prevent the consequences of various injuries. Therefore, the search and biomechanical justification of new, more effective methods of applied swimming is an important scientific and practical task.

The conditional division of the cycle into separate phases in all cyclic types of motor activity allows not only to study and evaluate the effectiveness of the technique of the method itself and the performance of the motor task by specific individuals, but also to apply a divided training method, focusing on the correct performance of one or another part or phase of the cycle (Bilinauskaite et al., 2013; Fernandes et al., 2012). Thus, experts Barbosa et al. (2013) recommend that for comparative analysis of the technique, consider its phase structure, which makes it possible to analyze the technique of the same athlete at different stages of training. From the time of the first studies of the phase composition of the swimming cycle to the present day, the crawl stroke technique has changed significantly. Accordingly, the phase composition of the swimming cycles has changed, as well as their description, analysis and practical recommendations for assessing the effectiveness of the technique, developed by various researchers.

Today, to assess the effectiveness of the crawl stroke swimming technique, the phase structure of the stroke is used on the basis of various spatial and spatio-temporal characteristics (Arishin & Pohrebnoy, 2016). Experts Bilinauskaite et al. (2016) and Gourgoulis et al. (2008) conditionally divided the stroke cycle into four phases: "slide" – from the entry of the hand into the water to its maximum forward movement; "pull up" – from the maximum forward movement of the hand to the vertical position of the arm shoulder; "push off" – from the end of the pull-up phase to the exit of the hand from the water; and "transfer" – from the moment the hand leaves the water to its re-entry into the water. Scientists Figueiredo et al. (2010) and Gourgoulis et al. (2013) also propose dividing the swimming cycle into four phases, but the first one is called "entry of the hand into the water and its capture". They consider the propulsive part of the stroke to be the sum of the second and third phases, and the non-propulsive part is the sum of the fourth and first.



Figure 1 Circular chronogram and relative duration of individual phases of the stroke constructed according to the data of Table 2, Gourgoulis et al., 2010, p. 6 (stroke length – 1.85 ± 0.09 m, stroke frequency – 0.84 ± 0.05 cycle/s, average speed – 1.56 ± 0.07 m/s, total stroke duration – 1.19 ± 0.10 s, $p < 0.001$) when swimming with a traditional crawl ($M \pm s$)

Researchers Gourgoulis et al. (2010) propose to include its downward movement in the phase of entry of the hand into the water and forward sliding until the hand starts to move back, creating a propulsive impulse.

For example, Fig. 1 shows the stroke chronogram when swimming with a traditional crawl, constructed by us according to the data of Table 2 of specialists Gourgoulis et al., 2010, p. 6, according to the relative duration of its individual phases ($M \pm s$): 1.19 ± 0.10 .

However, an in-depth analysis of the underwater part of the stroke, carried out by a number of swimming experts, as well as the results of their own research, indicate the feasibility of introducing a number of clarifications into the traditional division of the crawl stroke swimming cycle. Thus, scientists Maglischo (2003) found that after the completion of the propulsive phase with the right arm, the athlete's center of mass of the body (BMC) speed during the movement of the left arm down and forward begins to slow down until the left arm begins to move backward (closer to the moment when it captures the water). Then the athlete's BMC speed increases by two pulses until the left hand starts moving forward again, approaching the water surface. That is, the BMC of crawl swimmers accelerates forward only when, during the underwater part of the strokes, the hands move backward relative to the stationary pool: due to the work of the hands, the body does not accelerate forward from the moment the hand enters the water until it is captured at the bottom, as well as from the end of the underwater propulsive phase of the stroke until it leaves the water near the hips.

Taking into account the above, experts Maglischo (2003) suggest determining the moment of transition from one phase to another according to the change in the direction of movement of the hand performing the stroke, relative to the direction of the swimmer's forward movement (downsweep, upsweep, insweep, i.e. when the hand performing the stroke moves down, sideways and inward towards the swimmer's body, respectively).

Therefore, researchers Pinto et al. (2024) – taking into account the recommendations Maglischo (2003) – conventionally divided the stroke cycle into the following five phases: “beginning of the arm entering the water and capturing the water”, “arm

movement downwards”, “arm movement horizontally”, “arm movement upwards” and “exit and carrying the arm forward”. Specialists Krylov et al. (2019) conventionally divided the crawl swimming cycle (for each arm separately) into the “propulsive” phase, the “active braking” phase and the “braking” phase (during the surface movement of the arm forward), dividing the kinematic structure of the underwater part of the stroke into two parts – propulsion (propulsive) and active braking, when the total effect of all forces inhibiting the movement exceeds the swimmer’s efforts aimed at his forward movement in the water. In this case, despite the fact that in the final phase of the stroke the swimmer uses the most powerful muscle groups, the speed of his movement begins to decrease. This phase occurs not only in athletes of relatively low qualification, but also in high-class swimmers.

Experts Krylov et al. (2019) also confirm that in the initial phase of the stroke, the speed of the arm backward is less than the speed of the swimmer’s forward movement, and in its main phase it exceeds the speed of the swimmer’s forward movement, and the path traveled by him in this phase should be as long as possible, the arm should cover the horizontal path with maximum speed, and the greatest effort should fall on the last third of the stroke.

Given the above recommendations of a number of scientists Bilinauskaite et al., 2013; Figueiredo et al., 2010; Gourgoulis et al., 2008; 2010; 2013, formally the crawl stroke swimming cycle using the TI method can also be conditionally divided into four phases (for each arm), based on such limiting positions as the beginning of the arm’s downward movement until the shoulder reaches the vertical (pull-up phase), the arm’s backward movement until it completely leaves the water (repulsion phase), the arm’s forward movement above the water (forward arm movement phase), and the arm’s entry into the water and the body’s sliding forward (the arm’s entry into the water and its sliding forward phase). Unfortunately, the publications Laughlin & Delves, 2004; Laughlin, 2007; Laughlin & Delves, 2018 devoted to crawl stroke swimming using the full (total) immersion method (TI) do not provide either specific names or boundaries for the individual phases of the swimming cycle.

However, summarizing the results of crawl stroke swimming studies by specialists Arishin & Pohrebnoy, 2016; Krylov et al., 2019; Maglischo, 2003; Pinto et al., 2024, it can be stated that the conditional division of the crawl stroke swimming cycle by both the traditional method and the TI method into four phases (entry into the water, pulling up, pushing off, and moving the arm forward), proposed by the authors Bilinauskaite et al., 2013; Chollet et al., 2000; Figueiredo et al., 2010; Gourgoulis et al., 2010; 2013; Krylov et al., 2019, does not take into account certain periods during which the swimmer does not create sufficient driving force to overcome the resistance of the water to the moving body, and the intra-cycle speed of his forward movement decreases. But in order to objectively assess the effectiveness of crawl swimming by the traditional method and the TI method, it is necessary to experimentally study and analyze the biomechanical features of the motor activity of swimmers using the TI method, and compare them with similar data for traditional crawl swimming given in the special literature.

The aim of the study was to determine the main biomechanical characteristics of crawl swimming using the full immersion method and compare them with the corresponding characteristics of the classic crawl.

Methodology

Considering that the use of elements of the progressive method of crawl stroke swimming by the method of “full immersion” – Total Immersion (TI) (Laughlin & Delves, 2004; Laughlin, 2007; Laughlin & Delves, 2018) among swimmers of different qualifications occurs very individually, and today none of the qualified athletes swims a “pure” crawl stroke by the TI method, we involved in the experimental research a crawl stroke swimming instructor by the TI method, the director of the swimming school by the specified method Kreft, (2024), swimmer P. K., who demonstrated the classical technique of crawl stroke swimming by the TI method. She gave written consent to participate in the experiment, in which its protocol was described. The study was approved by the ethics committee of the Academy of Physical Education and Sports in Gdańsk and was carried out in accordance with the moral and ethical requirements and measures according to the Declaration of Helsinki on human research and the ethical standards proposed by experts Harriss & Atkinson, 2009.

The study was conducted in February 2023 in the morning in the 25-meter indoor pool of the specified university without the presence of outsiders in the pool. After a 500 m warm-up, the swimmer P. K. in a recreational mode swam ten times along the third lane of the pool in different directions. Her motor actions in the calibrated space of the middle part (from 5 to 20 m) of the pool. Mathematical processing of video recordings was carried out by a special motion analysis program Kinovea-0.9.5-x64. The duration of the swimming cycle T , the stroke length SL , the number of strokes per unit time SR (stroke rate) and the swimming speed V (velocity) were calculated: $V = SL \times SR$ of each of the ten swims, the average duration for both arms of individual phases of the swimming cycle, as well as the instantaneous intra-cycle values of coordinates, angles of inclination of different parts of the body, velocities of movement of fixed points on the body, fingertips, hand joints and WBC.

Results and Discussion

According to the results of computer analysis of materials of underwater video shooting from the side with a frequency of 120 Hz of ten times passing the P.K. pelvis of the middle part (from 5 to 20 meters) of a 25-meter pool in both directions, the duration of the swimming cycle T , the stroke length SL (stroke length), the number of strokes per unit time SR (stroke rate) and the swimming speed V (velocity): $V = SL \times SR$ of each of the ten swims (Table 1), as well as the average duration for both arms of the phases of the swimming cycle described above (Table 2 and Fig. 2):

Table 1 Kinematic parameters of 10 crawl stroke swims using the T1 method in a 25-meter pool for swimmer P.K., ranked by speed of movement

Nº	T cycle, s	SL, m	SV, m/s	SR, cycle/min.
1	2.68	2.78	1.037	22.38
2	2.63	2.58	0.981	22.32
3	2.41	2.28	0.948	24.90
4	2.62	2.47	0.943	22.92
5	2.53	2.38	0.941	23.70
6	2.38	2.13	0.895	25.20
7	2.70	2.41	0.893	22.20
8	2.59	2.31	0.892	23.16
9	2.42	2.12	0.876	24.78
10*	2.41	2.10	0.871	24.90
<i>M ± s</i>	2.537 ± 0.039	2.356 ± 0.069	0.928 ± 0.017	23.646 ± 0.381

* – inhale performed

Table 2 Average duration of crawl stroke cycle phases using T1 method, calculated based on video recording at 120 Hz of ten swims in a 25-meter pool by swimmer P.K.

Nº	Phase	Shot number			Phase duration, s; %
		Right arm	Left arm	Average	
1	Slide	133.5 ± 3.4	137.2 ± 4.3	135.35 ± 2.69	1.128 s; 43.58%
2	Pull up	54.5 ± 3.2	53.8 ± 1.4	54.15 ± 1.68	0.451 s; 17.43%
3	Push off	62.4 ± 1.3	61.2 ± 0.8	61.80 ± 0.76	0.515 s; 19.90%
4	Transfer	58.6 ± 3.2	60.0 ± 2.2	59.30 ± 1.87	0.494 s; 19.09%
Total:		135.35 + 54.15 + 61.80 + 59.30 = 310.60			2.588 s; 100%



Figure 2 Circular chronogram and relative duration of individual stroke phases (stroke length – 2.356 ± 0.069 m, stroke frequency – 23.646 ± 0.381 cycles/min, average speed – 0.928 ± 0.017 m/s, total stroke duration – 2.588 s) in crawl stroke swimming by the T1 method (*M ± s*), calculated based on the analysis of the results of video recording of ten swims in a 25-meter swimming pool by P.K.

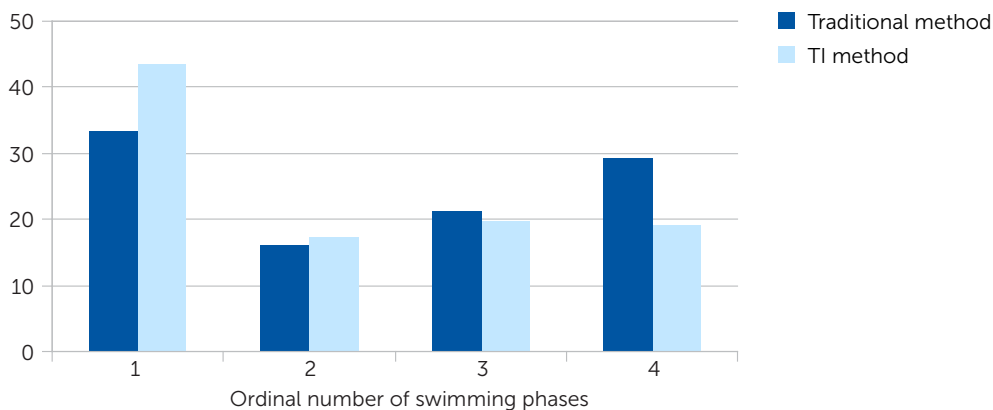


Figure 3 Relative duration of the phases of the swimming cycle in crawl stroke by the traditional method and TI method: 1 – phase of entering the hand into the water; 2 – phase of pulling up; 3 – phase of pushing off; 4 – phase of carrying the hand over the water (phase names are conditional)

Comparison of the relative durations summarized in Table 2. of the phases of the swimming cycle (crawl stroke by the TI method) with the relative duration of the phases of the crawl stroke cycle by the traditional method, calculated by experts Gourgoulis et al. (2010) (Fig. 3), allows us to state that the intra-cycle temporal (rhythmic) structure of crawl stroke swimming by the TI method is significantly different from the temporal rhythm of traditional crawl stroke swimming.

Thus, in TI swimming, the phase of entering the water and sliding forward lasts 30.91% longer, and the phase of carrying the hand over the water is 34.91% shorter than the similar phases in swimming by the traditional method. The relative duration of the phases of pulling up and pushing off in crawl stroke by the specified methods also differs, but the differences found are significantly smaller (in TI crawl stroke, pulling up is 7.73% longer, and pushing off is 6.18% shorter than such phases in swimming by the traditional crawl stroke). This means that a swimmer using the TI technique “glides” forward for longer, trying first of all to reduce water resistance during the transfer of the arm over the water, when he moves with the lowest instantaneous speed, due to the maximum elongation of the body (improving its streamlining), as well as to increase the length of the SL stroke (the basic principle of increasing the minimum and average intra-cycle swimming speed without additional effort and energy expenditure for Laughlin, 2007).

It should be noted that the total time of the full crawl stroke cycle by different methods (1.19 ± 0.10 s by the traditional method and 2.59 ± 0.09 s by the TI method), which we compare, differs by more than twofold, but the results of comparing such stroke indicators as SL, SV and SR when swimming by the traditional method (1.85 ± 0.09 m; 1.56 ± 0.07 m/s and 50.40 ± 0.30 cycles/min., Table 4) and the TI method (2.36 ± 0.07 m; 0.93 ± 0.02 m/s and 23.65 ± 0.38 cycles/min., Table 5) indicate that in the case of using the TI method, even with a lower average swimming speed SV by 40.39%, the stroke length SL is greater by 21.61%, and the stroke frequency was more than twice as low – by

53.08%. Considering that we compared the characteristics of crawl stroke swimming by the traditional method and the TI method in different modes (traditional crawl stroke was swam by female athletes aged 18.2 ± 4.6 years with the best result at a distance of 100 m in a 50-meter pool of 63.32 ± 2.27 s), who covered a distance of 25 m with maximum intensity Gourgoulis et al., 2010, and P.K. covered a distance of 25 m by the TI method ten times at a recreational pace), the results described above give only a qualitative assessment and require further confirmation in pedagogical experiments under the condition of involving swimmers of the same qualification, at different distances and in the same modes.

The underwater part of the crawl stroke swimming cycle using the TI method begins with the phase of entering the hand into the water and sliding forward. Specialists in TI swimming describe it as a sequential lowering (entry) of the hand (at an initial angle of inclination from the horizontal of 45°), forearm and shoulder into the water; the hand and the entire hand are lowered into the water, continuing the longitudinal axis of the body through the axis of the shoulder joint; the hand is maximally extended forward.

Fig. 4. shows the change in the angle of inclination of the hand α_m in the phase of the hand entering the water and sliding forward, calculated based on the results of an underwater video recording with a frequency of 120 Hz of swimming crawl stroke by P.K. by the TI method in a 25-meter pool.

According to the data presented in Fig. 4, immediately after the entry of the fingertips of the hand into the water, it, oriented relative to the water surface at the end of the above-water phase of the transfer at an angle of 45° , immediately begins to rotate in the horizontal direction, and when it is completely immersed, the angle between the plane of the hand and the horizontal becomes -9.0° . After that, within 0.5 s, its inclination decreases almost linearly to the horizontal position. After that, a smooth, but already slowed-down rotation of the plane of the hand continues upwards (for 0.2 s), reaching a rotation angle of 1.5° , and then the hand (also for 0.2 s) begins to smoothly tilt downwards, and at the end of the phase it again takes a horizontal position.

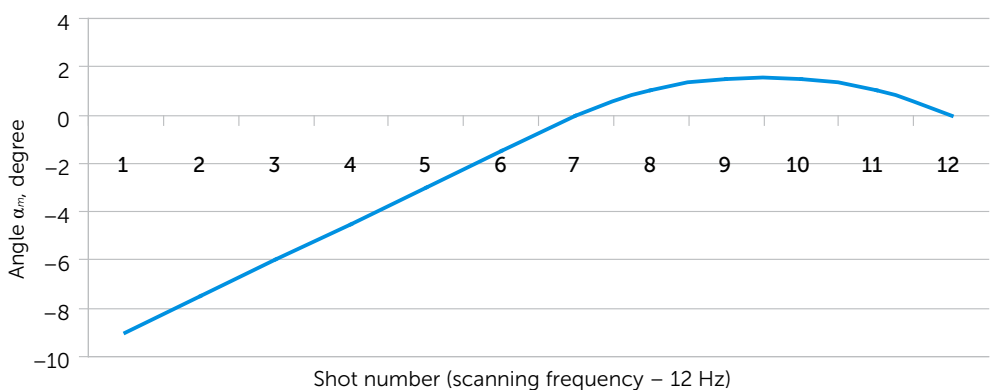


Figure 4 Angle of inclination α_m of the plane of the hand relative to the horizontal in the phase of entering the water and sliding forward

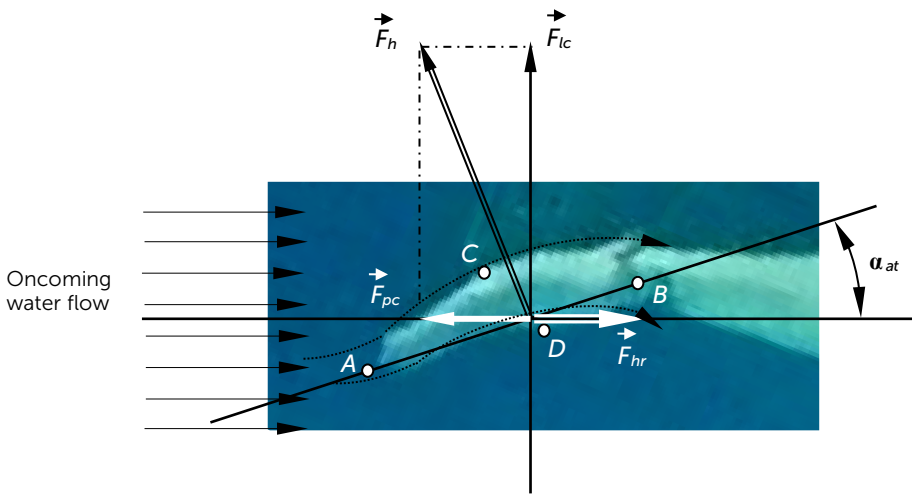


Figure 5 Scheme of calculation of the lifting hydrodynamic force, which in certain zones of the phase of the hand entering the water and sliding forward can be created by its hand due to the convexo-concave profile in the sagittal plane, which determines the difference in the speeds of the oncoming water flows above and below it, where: F_h – hydrodynamic force; F_{lc} – lifting component of the force F_h ; F_{pc} – propulsive component of the force F_h ; F_{hr} – force of hydrodynamic resistance of the water environment to the moving hand; α_{at} – angle of attack; A and B – points on the front and back parts of the hand; C and D – points on the upper and lower surfaces of the hand

Analysis of the shape of the hand, its inclination relative to the horizontal and its movement relative to the stationary pool during the phase of entering the water and sliding forward allows us to assume that in certain zones of the specified phase it can create a hydrodynamic lifting force due to the difference in the velocities of the oncoming fluid flows above and below the plane of the hand, caused by its specific convexo-concave profile in the sagittal plane (Fig. 5).

0.58 s after the beginning of the phase of entering the hand into the water and sliding forward, the angle of inclination of the hand passes the zero value, and by the moment of 0.8 s it increases to 1.5°. By this moment, the shape of the hand, compared to the first part of the phase, gradually changes due to full extension and maximum extension of the fingers forward, and its new shape does not allow to hope for the creation of hydrodynamic force due to the difference in relative speeds of the flows above and below it. Then the axis of the hand plane again tilts to the horizontal position and preparation for the next phase begins – pulling up. During the preparation for the pulling up phase, the horizontally oriented hand begins to descend, diving to a depth of more than 21 cm. At this point, the first phase of the crawl stroke swimming cycle – entering the water and sliding forward – ends, and its next phase begins.

Unlike crawl stroke swimming using the TI method, during traditional crawl stroke swimming, it does not seem possible to create a hydrodynamic force with the hand during the phase of the hand entering the water, the horizontal component of which may

be propulsive, since after the hand is immersed in water at an angle of inclination to the horizontal close to 30° , its plane does not return to the horizontal, as in crawl stroke swimming using the TI method, but continues to tilt downwards, reaching and passing into a vertical position.

In general, the theoretical justification of the very possibility of the occurrence of such a hydrodynamic force and the calculation of its quantitative value, taking into account the lack of such studies and the possible influence on the result of such a calculation of a large number of unaccounted factors (small profile width, smooth transition of the hand into a massive forearm, screen effect from the water surface, change in the hand profile, etc.) are significantly complicated. Therefore, this requires additional experimental studies, and at this stage, only a qualitative description and assessment of the possible characteristics of such a driving force during the phase of the hand entering the water and sliding it forward is possible. However, the presence on the graph of the instantaneous intra-cyclic velocity of the body movement in crawl swimming using the TI method of a pronounced acceleration at the very beginning of the phase of the hand entering the water (Fig. 7) may be confirmation of the emergence of such a hydrodynamic force.

The pull-up phase begins with the beginning of the movement of the entire straightened arm (with the forearm and hand slightly averted to the side) downward relative to the longitudinal axis of the body; the hand, moving downward, “grabs” the water, the arm gradually bends at the elbow joint to 90° . The pull-up phase ends when the shoulder becomes perpendicular to the longitudinal axis of the body.

The limiting positions of the specified phase according to the location of the arm performing the stroke are its maximum straightening forward and the beginning of the downward movement, as well as the passage of its shoulder through a vertical position relative to the longitudinal axis of the body.

The movement of the arm performing the stroke downward in the pull-up phase begins from its maximally extended forward position, when the fingertips at the end of the phase of the hand entering the water and sliding forward, move relative to the stationary pool together with the body at a speed of more than 0.76 m/s. But to create a propulsive force in the pull-up phase, the hand must move backward relative to the pool, and such a change in speed cannot occur instantly and requires a certain time. The results obtained by the researchers Maglischo (2003) confirm that after pulling the arm forward before the stroke, the hand continues to move forward for a certain time, creating not a driving force, but additional resistance to movement. Therefore, based on the movements of the fingertips and the center of the elbow joint of the arm performing the stroke, we calculated their instantaneous horizontal velocities during the pull-up and push-off phases. The results of these calculations, shown in Fig. 6, made it possible to identify separate zones in the underwater phases of the crawl stroke using the TI method, in which the creation of the proper propulsive force is not possible.

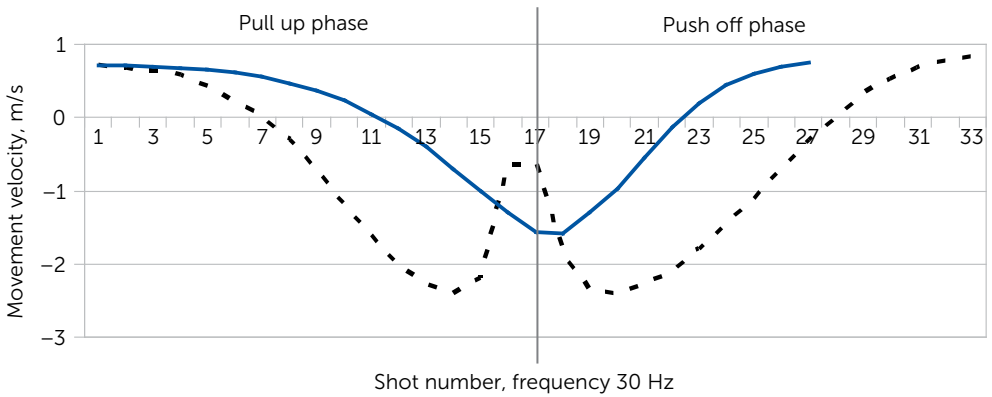


Figure 6 Velocity of movement of the elbow joint V_b (—) and fingertips V_m (- - -) of the right hand relative to the stationary pool in the phases of pulling up and pushing off in the crawl stroke swimming cycle using the TI method (25-meter pool, P. K. fin, recreational swimming mode)

According to experts in the crawl stroke swimming technique Kreft, 2024; Krylov et al., 2019, the push-off phase is the most effective propulsive phase of the underwater part of the swimming cycle, during which the arm performing the stroke reaches the highest speed of movement back to the hip line. By the end of the phase, the arm straightens, and after the end of the push-off, inhalation usually begins, which is performed with a turn of the head.

The limiting body posture, as the beginning of the specified phase – according to the location of the arm performing the stroke – is the vertical position of the shoulder relative to the longitudinal axis of the body, and the posture of the end of the phase is the complete exit of the hand from the water.

After the underwater part of the stroke, the hand performs a preparatory, or surface phase, which consists of successively removing the shoulder, forearm and hand from the water, which are significantly facilitated by rotation (lateral turn) of the torso. The beginning of the transfer of the hand above the surface of the water after its exit is carried out slightly bent at the elbow joint. The arm is then brought forward above the water and in the middle of the surface phase the elbow flexion increases to 90–120° (the “high elbow rule”). After the surface phase the arm enters the water and the underwater part of the swimming cycle begins again.

According to experts Laughlin & Delves, 2004; Laughlin, 2007; Laughlin & Delves, 2018 the TI crawl stroke is a two-stroke stroke. However, the nature of the propulsive impulses generated by the lower limbs differs from the leg work in traditional crawl stroke. Despite the fact that the contribution of leg work to the swimmer’s forward movement in the crawl stroke is smaller than in other swimming styles. Leg movements in the TI crawl stroke play a very important role in rotation and balancing the body, thereby ensuring its high streamlining.

Approximately during the first half of the push-off phase of each arm, the TI crawl stroke swimmer keeps the hips parallel to each other, which rotate synchronously with the torso around an axis longitudinal to the direction of swimming. Approximately 59.3 ± 3.94 frames (0.494 s) before the start of the pull-up phase with one hand, while it slides forward, a slow (so as not to create a large hydrodynamic resistance, which requires additional energy expenditure) leg extension begins. The total duration of the preparatory leg extension phase lasts about 86.1 ± 4.12 frames, or 0.718 s. After this, a much more intense leg extension begins, which lasts for 46.4 ± 1.84 frames (0.387 s). During the upward movement of the opposite leg, the lower leg with the foot of the same name under the action of hydrodynamic resistance at the beginning of its downward movement bends in the knee joint on average – to an angle of $157.9 \pm 3.32^\circ$ (in the classic crawl this angle is much smaller – $130\text{--}140^\circ$), and immediately after this, the flexion of the thigh in the hip joint is sharply inhibited by the action of the extensor muscles, which stop it and try to start moving upwards, and the lower part of the leg begins to unbend intensively according to the whip principle, creating, due to the maximally bent foot, like a shovel, and the lower leg, a powerful propulsive impulse directed back and up, which moves the body forward and allows it to stay closer to the surface of the water (in the special literature on swimming, it is called a “stroke”). The “stroke” itself, unlike the traditional crawl stroke, is characterized by a significantly smaller amplitude.

The legs in crawl stroke swimming using the TI method do not reach the surface of the water, without creating the associated additional resistance to movement.

The summary of the above is shown in Fig. 7, where the chronogram of the stroke phases by the action of the arms and legs is superimposed on the graphs of the instantaneous intra-cyclic velocities of the fixed point of the pelvis (top) and the fingertips (bottom). A comparison of the data presented in Fig. 7 explains the reasons for the increase and decrease of the instantaneous intra-cyclic velocity of the body movement calculated from the movement of the fixed point.

Thus, the decrease in the instantaneous velocity of the pelvis in certain periods of the swimming cycle is mainly due to the instantaneous velocity of the fingertips, which create propulsive forces. Thus, at the beginning of the pull-up phases and in the second half of the push-off phases, the instantaneous velocity of the pelvis decreases because the hands at this time move forward relative to the stationary pool and cannot create propulsive forces. At the boundary of the pulling and pushing phases, the hand, which moved backward under the body relative to the stationary pool, moves from under the body, which prevents its further movement, to the side to continue the stroke, and at this moment its horizontal speed, as well as the propulsive force created by it, sharply decrease, which causes a decrease in the instantaneous velocity of the pelvis. Its acceleration at the beginning of the phases of the hand entering the water and sliding forward can be caused by the hydrodynamic effect created by the hand, moving at appropriate angles relative to the water environment. A certain (but relatively insignificant) contribution to the propulsive movement of the body at the beginning of the phases of the legs being brought together is also made by the lower limbs. Such an analysis of the instantaneous

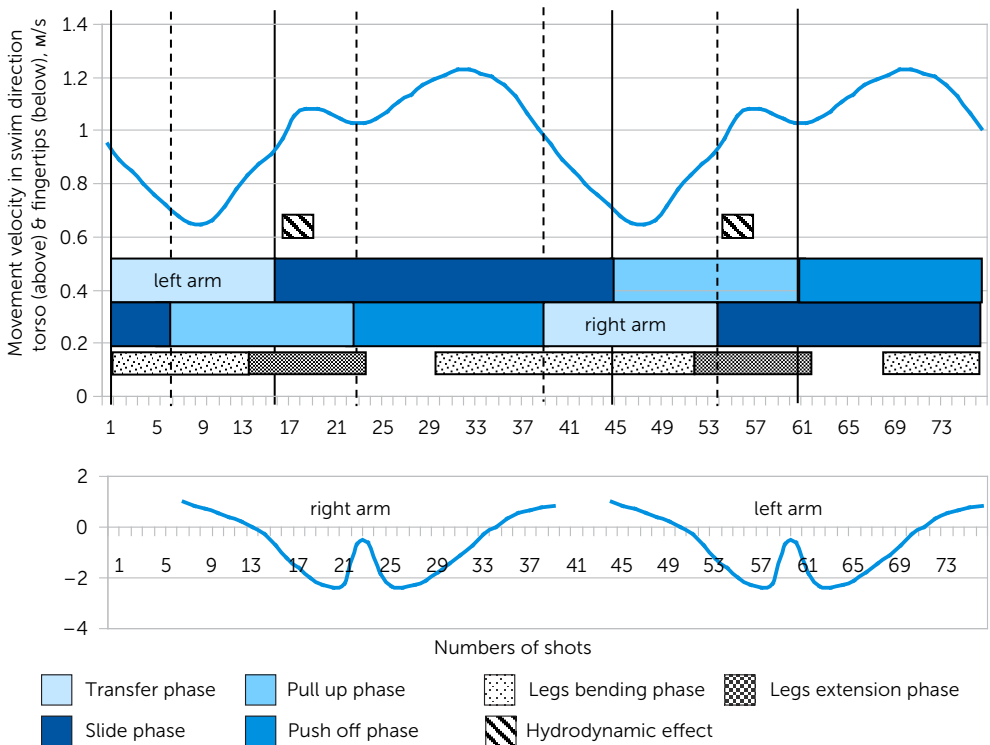


Figure 7 Graph of instantaneous intra-cyclic velocity of movement in the direction of swimming of the torso (top) and fingertips of the hand performing the stroke (bottom) of crawl stroke swimming using the TI method; below the figure are the main phases of the cycle (swimmer P. K., 25-meter pool, full cycle with two arms, recorded between 10 and 15 m of distance by an underwater video camera with a frequency of 120 Hz)

intra-cyclic velocity of a fixed point on the swimmer's body makes it possible to find out due to what and when propulsive forces are created during the stroke, how to increase them or make them smoother, and where to look for reserves for increasing swimming efficiency.

According to the results of numerous studies Alberty et al., 2005; Barbosa et al., 2006; 2013; Bilinauskaite et al., 2013; Fernandes et al., 2012; 2023; Figueiredo et al., 2012; Psycharakis et al., 2010; VilasBoas et al., 2010, it has been established that the spatio-temporal characteristics associated with fluctuations (fluctuations) of intra-cycle velocity (hereinafter – IVV – Intracycle Velocity Variation) in crawl swimming most closely reflect the level of efficiency of swimming technique. The data analyzed by us regarding the value of IVV, obtained by various scientists Feitosa et al., 2013; Fernandes et al., 2023; Figueiredo, 2011; Gourgoulis et al., 2010; 2013; Krylov et al., 2019; Pinto et al., 2024 and Psycharakis et al., 2010, made it possible to determine the parameters of the regression line between the values of IVV and the average intra-cycle velocity of movement at a fixed point on the swimmer's body. This allows us to calculate the expected average value of

IVV for different average speeds V_{av} of body movement, as well as to compare the IVV values obtained by different researchers for different average speeds:

$$IVV = -18.34 \times V_{av} + 43.97 \quad (\%) \quad (1)$$

The expected value of IVV of a fixed point on the body of the fin of P.K. calculated by the above formula should be 26.01%. However, the IVV calculated from the materials of underwater video recording turned out to be 18.703%, which is almost 40% lower.

The parameters of the regression line between the IVV values and the average intra-cyclic speed of movement of the BMC of amateurs, novice swimmers and swimmers of low qualification were also determined:

$$IVV = -10.9 \times V_{av} + 22.72 \quad (\%) \quad (2)$$

The value of IVV of the BCM of the fin of P.K. calculated by the formula (2) is 12.038%, and the IVV value calculated from the results of underwater video recording (7.013%) is more than 40% lower.

The indicators of swimmer P. K. during crawl stroke swimming using the TI method in a 25-meter pool in a recreational mode also turned out to be smaller than the average IVV values for crawl stroke swimming according to literature data, which were calculated based on the movement of a fixed point on the body ($20.11 \pm 1.50\%$) and the movement of the BMC ($10.08 \pm 1.74\%$) for swimmers of different qualifications.

Thus, the IVV of crawl stroke swimming using the TI method for P. K. swimmers calculated experimentally by us – both by the movement of the pelvis and by the BMC movement – turned out to be significantly lower than the IVV values calculated by the regression equations for crawl stroke swimming using the traditional method, and also lower than the average values of such indicators according to the special literature, which allows us to conclude that the first method of swimming is more effective.

Conclusions

1. The conditional division of the crawl stroke swimming cycle by both the traditional method and the TI method into four phases (entry into the water, pulling up, pushing off and carrying the hand forward), proposed by numerous scientists, does not take into account certain periods during which the swimmer does not create sufficient driving force to overcome the resistance of the water to the moving body, and the intra-cyclic speed of his forward movement decreases. Therefore, for an objective assessment of the effectiveness of crawl stroke swimming by the traditional method and the TI method, it is necessary to experimentally study and analyze the biomechanical features of the motor activity of swimmers using both methods of crawl stroke swimming
2. As a result of the experimental study of crawl stroke swimming by the TI method, it was found that the phase of entering the water and sliding forward lasts 30.91% longer, and the phase of carrying the hand over the water is 34.91% shorter than the similar phases of traditional crawl stroke swimming. This means that a swimmer using the TI

technique “glides” forward longer, trying first of all to reduce water resistance during the transfer of the arm over the water, when he moves with the lowest instantaneous speed, due to the maximum elongation of the body (improving its streamlining), as well as to increase the length of the SL stroke to increase the minimum and average intra-cyclic swimming speed without additional effort and energy expenditure. The relative duration of the pull-up and push-off phases in crawl stroke swimming by different methods also differs, but the differences found are significantly smaller (in the TI crawl, the pull-up is 7.73% longer, and the push-off is 6.18% shorter than such phases in traditional crawl swimming). It was found that in crawl swimming using the TI method, even with a lower average swimming speed SV by 40.39%, the stroke length SL is 21.61% longer, and the stroke frequency is 53.08% lower than in swimming using the traditional method.

3. Analysis of the shape of the hand, its inclination relative to the horizontal and its movement relative to the stationary pool during the phase of entering the water and sliding forward allows us to assume that at the beginning of the specified phase it can create a hydrodynamic lifting force due to the difference in the speeds of the oncoming fluid flows above and below the plane of the hand, caused by its specific convexo-concave profile in the sagittal plane. Theoretical justification of the possibility of the occurrence of such a hydrodynamic force and calculation of its quantitative value are significantly complicated and require additional experimental studies. However, the accelerations of the body detected at the beginning of the phases of the entry of the hands into the water may be confirmation of the emergence of such a hydrodynamic force.
4. The decrease in the instantaneous intra-cyclic velocity of the pelvis in certain periods of the swimming cycle is due to a change in the instantaneous velocities of the hands, which create propulsive forces. Thus, at the beginning of the pull-up phases and in the second half of the off phases, the instantaneous velocity of the pelvis decreases because the hands at this time move forward relative to the stationary pool and cannot create propulsive forces. At the boundary of the pull-up and off phases, the hand, which previously moved backward under the body, moves sideways to continue the stroke, and at this moment its horizontal velocity, as well as the propulsive force created by it, sharply decrease. The acceleration of the body at the beginning of the phases of the entry of the hands into the water and sliding forward may be caused by the hydrodynamic effect created by the hand, moving at appropriate angles relative to the water environment. A certain (but relatively insignificant) contribution to the propulsive movement of the body at the beginning of the legs' abduction phases is also made by the lower limbs.
5. The IVV values of crawl swimming using the TI method in P.K.'s pelvis, determined experimentally by us – both by the movement of the pelvis and by the movement of the BMC – turned out to be significantly lower than those calculated by the regression equations for crawl stroke swimming using the traditional method (calculated IVV of the pelvis 26.01%, and the actual one – 18.703%; calculated IVV of the BMC 12.03%,

and the actual one – 7.013%), as well as lower than the average values of such indicators according to the special literature, which allows us to conclude that the efficiency of crawl stroke swimming using the TI method is higher than that of traditional crawl swimming.

However, all conclusions require additional experimental confirmation in a pedagogical experiment involving two groups of novice swimmers who were taught crawl stroke swimming using different methods.

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BIOMECHANICAL RATIONALE OF THE DRIVER'S WORKING POSTURE BEHIND THE WHEEL OF A CAR

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ABSTRACT

An important element of active road safety is the correct working posture of the driver behind the wheel, which ensures a reduction in the number of driving errors, delays the onset of fatigue, and prevents driver injury in emergency situations.

The purpose of the study is the biomechanical justification of the individual safe working posture of the driver. To achieve the goal, video recording of the working posture behind the wheel of the world's best rally drivers was used; electromyography on a simulator of the main muscles involved in steering the wheel; a pedagogical experiment involving qualified drivers who repeatedly passed the slalom course in different working postures behind the wheel of a production car; methods of mathematical statistics.

It was found that the winners of the World Rally Championship sit behind the wheel with the seatback tilted back minimally and with their arms bent at right angles at the elbows, holding the steering wheel. The results of a pedagogical experiment with drivers who repeatedly drove a slalom course in a production car in different working positions, as well as electromyography of the muscles involved in turning the steering wheel, confirmed that the described position behind the wheel of the world championship leaders provides the highest steering accuracy and speed, the ability to apply the greatest force to hold and turn the steering wheel in emergency situations, as well as reducing fatigue during a long trip.

Therefore, to reduce the number of road accidents, drivers can be recommended the working posture described above.

It is expected that the implementation of the developed practical recommendations will allow to increase the level of active road safety.

Keywords: *car, driver, comfort, safety, fatigue, steering wheel, working posture, car rallies*

Introduction

The requirement to ensure human health and safety at all levels of its activity requires a detailed study of the phenomena that occur during movement and accidents

of the “driver-vehicle-road-environment” (DVRE) systems (Rybak et al., 2018). As experts claim Rybak, 2013, the importance of the subjective factor – the driver – in this system undoubtedly outweighs the importance of objective factors. Therefore, improving his workplace is an important scientific and practical task.

According to UNESCO, among the causes of human mortality in peacetime, road accidents (RA) rank third in the world after malignant tumors and cardiovascular diseases. Road traffic accidents continue to remain one of the leading causes of mortality and a direct economic burden worldwide (World Health Organization [WHO] (2023). The WHO Global Report on Road Safety 2023 details the scale of road traffic deaths and progress in improving laws, policies and actions to reduce them worldwide. It reviews progress made between 2010 and 2021 and sets a baseline for the United Nations road safety targets and actions for 2021–2030, which aim to halve road traffic deaths and injuries by 2030. While road traffic deaths fell to 1.19 million per year between 2010 and 2021, and efforts to improve road safety are paying off, the cost of mobility remains too high, and urgent action is needed to halve road traffic deaths and injuries by 2030. Unless urgent action is taken, WHO estimates that road traffic accidents will become the seventh leading cause of civilian death by 2030. Today, 90 percent of road traffic accidents occur in low- and middle-income countries, which have not yet benefited from the stricter vehicle standards and effective road safety laws established in high-income countries.

A number of modern scientific studies are devoted to the analysis of the causes of road accidents Bucsuházy et al., 2020; Inah et al., 2025; Hill & Boyle, 2006; Shakil et al., 2023. One of them is the incorrect working posture of drivers behind the wheel. Modern methods are used to study it Bingley et al., 2005; Carlsson et al., 2016; Chen et al., 2016; Reed et al., 2000; Zhao et al., 2018; widely using posture modeling Fehren et al., 2003; HaultDubrulle et al., 2011; Östh et al., 2014. The working posture behind the wheel is associated with driver fatigue, which is often the cause of accidents Grujicic et al., 2010; Michida et al., 2001; Park et al., 2002.

Much attention of researchers is directed to studying changes in the working posture of drivers immediately before an accident Ejima et al., 2008; Gao et al., 2016; Hetier et al., 2005; Khattak et al., 2024, as well as the relationship between the posture of drivers and passengers in vehicles and the severity of injuries they receive as a result of a road accident (Doecke et al., 2020; HaultDubrulle et al., 2011; Hou et al., 2020; Katsuhara et al., 2017; Leledakis et al., 2021; Schaefer et al., 2021.

The results obtained by the above-mentioned scientists clearly confirm the feasibility of reducing the impact on road accidents of the weakest link in the human-machine-road-environment system, which is the driver (Rybak et al., 2019), by improving his working posture while driving.

In recent years, a number of publications have been published on recommendations for correct posture while driving (PhysioMed (n.d.). *Correct sitting posture*; Uti res (n.d.). *Driving posture tips and stretches for a long trip*; Evercare Protection. (n.d.). *6 maneras de asegurar una postura correcta al volante*; Frotcom. (2021, November). *7 sencillos consejos para una buena postura al volante*; Lipe, 2023). However, these recommendations

are usually subjective and fragmentary in nature, as they are not supported by scientific research results and are based on traditional approaches and personal experience; the authors of these recommendations are not indicated, etc. Therefore, the problem of improving the ergonomic working posture of the driver behind the wheel, which would ensure precise control of the vehicle for a long time without fatigue, the successful implementation of all anti-accident actions to prevent accidents or reduce their severity (active safety elements), as well as reducing injuries in the event that an accident is inevitable (passive safety). Such a posture should also allow the driver to act with the necessary effort on the steering wheel and brake pedal in the event of an unexpected failure of the power steering and brakes (for example, when the corresponding drive belt is damaged, a hose bursts, the engine of a car with automatic transmission stalls, etc.) – in situations that almost 100% cause serious accidents.

The study of such an important element of vehicle control as steering is devoted to the work of the authors Atkinson et al., 2002; Previati et al., 2024; Walton & Thomas, 2005, who found that drivers often provide torque with one hand, and do not create it with both hands, applying force to the steering wheel in opposite directions. It was also found that gripping the steering wheel with the hands by its lower part creates a significant risk of injury to the upper limb during airbag deployment. However, participation in steering wheel rotation of various functional muscle groups of the driver, the magnitude of torques created on the steering wheel and the accuracy of steering wheel turns in different working postures have not been studied enough and require further study.

The aim of the scientists Siqueira Labrego et al. (2025) was to determine the optimal posture of a person while sitting and standing based on a questionnaire of 544 Greek physiotherapists, who chose the optimal sitting posture from seven options proposed by the researchers, and from five options for standing, justifying their choice. The topic of the study itself was considered important or very important by 93.9% of the respondents. Of these, 97.5% chose three different sitting postures as optimal. Despite the lack of complete consensus, the most frequently chosen postures were certain variations of vertical lordotic sitting, in contrast to stooped spine curves or forward head postures, which were almost never chosen as optimal. The survey participants used similar arguments to justify their choice – natural spinal curves, muscle activation. It turned out that the optimal position for the curvature of the thoracolumbar and lumbar spine, as well as the level of comfort, is the best one with the backrest tilted at an angle between 0° and 15°. The results obtained by the authors Korakakis et al. (2019) confirm previous data regarding the optimality of vertical lordotic sitting postures and can be recommended when modeling the working posture behind the wheel.

All the studies described above (except Katsuhara et al., 2017) concern the working posture behind the wheel and its influence on the accident rate on the roads of civilian and professional drivers of different categories who drive different vehicles in different conditions. The working posture behind the wheel of the best drivers in the world, such as rally racers – participants in world championships – has not been studied enough, although the parameters of their working posture behind the wheel of sports cars, which

ensures accurate, efficient, long-term and error-free driving, and also allows you to avoid (or significantly reduce the severity of) injuries in emergency situations, can be successfully used to develop practical recommendations for civilian drivers, including drivers of special, rescue, operational and military vehicles.

Incorrect driver posture behind the wheel leads to rapid fatigue and decreased concentration caused by the need to constantly hold your own body. Compliance of the parameters of the driver's working posture with his anthropometric characteristics ensures alignment and support of the head, neck, arms, back, buttocks and legs, helps reduce static and dynamic mechanical loads and overloads and fatigue, and also significantly reduces the risk of injury in emergency, extreme and emergency situations. Ergonomic "seating" allows the driver to receive more complete and detailed information about the movement of the car, determines the accuracy of work with the controls, increasing active road safety (Rybak et al., 2018; Rybak, 2013).

Therefore, the purpose of the study was chosen to substantiate and improve recommendations for individualizing a safe working posture behind the wheel.

Methodology

To achieve the goal of our research, a number of experimental methods were used. The study of the driver's muscle biocurrents during steering wheel rotation was carried out using the multi-channel functional complex "Neuro-MVP8" in laboratory conditions on a passenger car simulator designed by us Rybak O. & Rybak L (2012) with the involvement of the master of sports in automobile sports Yu.R. (age – 35 years, experience in car racing – over 20 years), who gave written consent to voluntary participation in the experiment, in which the research protocol was described in detail. After a 15-minute warm-up on the simulator (simulating the passage of high-speed sections of the Rally of Finland – gravel roads with many turns and elevation changes) for 30 minutes using skin electrodes – during the simulation of the passage of the following routes of high-speed sections on the simulator – the electrical activity of the muscles of those functional muscle groups that can participate in steering was recorded.

The biocurrents of the studied muscles were recorded by applying the surface electrodes "Skintakt" an interelectrode distance of 2 cm to the zones of their motor points with. The electrodes were placed along the fibers or in the center of the the greatest contouring of the muscle. Recording and processing of signals was carried out using a personal computer.

In order to experimentally verify the feasibility of the recommendations we developed regarding the individualization of the working posture behind the wheel to improve the steering process, the exercise of passing the element of the automobile slalom "snake with a variable step between chips" on a production car was chosen, the result of which directly depends on the efficiency of steering. Ten driving instructors from the Lviv driving school – the center for improving driving skills (persons aged 28–34 years, with driving experience of over 10 years and experience as a driving instructor of over 5 years)

were involved in the pedagogical experiment. All persons involved in the pedagogical experiment gave written consent to voluntary participation in it, in which the research protocol was described in detail.

The protocols of both experimental studies were approved by the ethics committee of the Ivan Boberskij Lviv State University of Physical Culture. They were conducted in accordance with the moral and ethical requirements and measures according to the Declaration of Helsinki on human research and the ethical standards proposed by experts (Harriss & Atkinson, 2009).

Instructors involved in the pedagogical experiment took turns driving the same production car “Škoda Fabia III” with an engine capacity of 1400 cm³ and passed the “snake with variable pitch” track shown in Fig. 1 – an element of automobile slalom. To exclude the influence on the result of the drivers’ reaction, the start was given from the place after the starter’s signal and turning on the stopwatch from the photoelectric pair located at a distance of 0.2 m from the starting line, when its beam crossed the front bumper of the car. The finish was performed “in motion”, the arrival time was recorded by the stopwatch with an accuracy of 0.01 s at the moment of operation of the same photoelectric pair. Time of day – from 13:00 to 14:45, the track was dry and clean, air temperature + 23°C, cloudy and no direct sunlight. The first race of the experiment participants took place in the “average” (a) landing, the second – in the “close” (b), and the third – in the “far” landing (c) – as in Fig. 2. After the described part of the experiment, each driver established an individual working posture according to our recommendations, and then ran the slalom course for the fourth time.

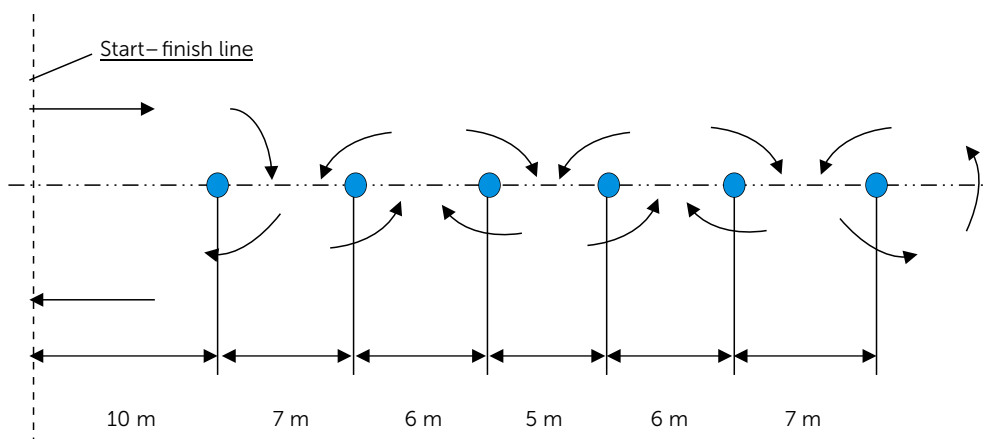


Figure 1 Slalom course used for the experiment

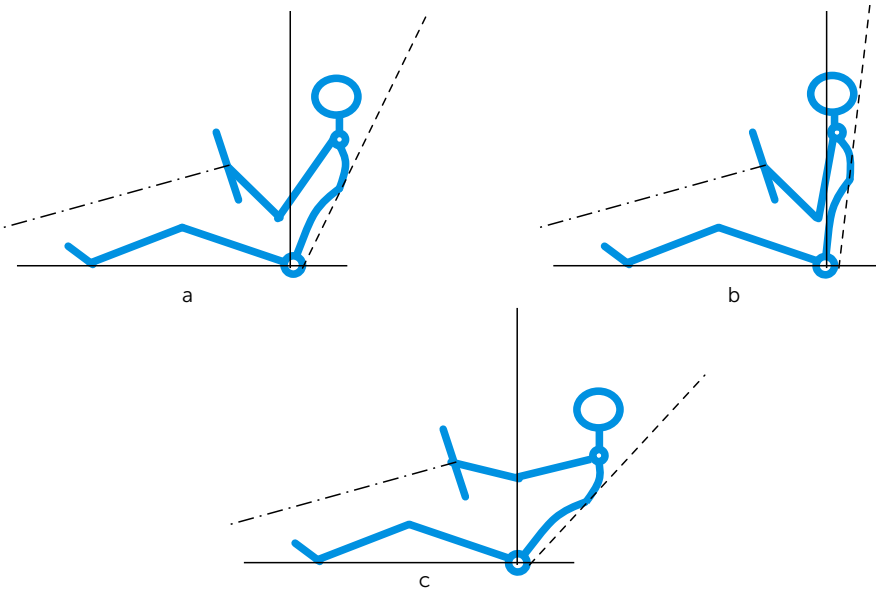


Figure 2 "Average" (a), "close" (b) and "far" (c) landing in a car

Results

The results of timing all races that were part of the pedagogical experiment with the participation of ten driver-instructors, who took turns passing the route of the "snake with variable step" automobile slalom exercise in a production car in four different working positions, are summarized in Table 1.

The conducted electromyographic study made it possible to establish which functional muscle groups (hereinafter referred to as FMG) of the driver are involved in turning the steering wheel to the right and left. During its turn to the right (clockwise from the driver's side), electrical activity was detected in the flexors and abductors of the right shoulder, pronators and extensors of the right forearm (the flexors of the fingers of the right hand and the muscles of the shoulder girdle perform the holding work), as well as the extensors and adductors of the left shoulder and supinators and flexors of the left forearm. When turning the steering wheel to the left (counterclockwise), the same FMGs are active, but in the left and right hands, respectively.

Table 1 Total duration of the route of the "snake with variable step" exercise from the automobile slalom program in "medium", "close", "far" and individual optimal landings by the drivers involved in the experiment ($M \pm s$)

Drivers' landing type	«medium»	«close»	«far»	Individual optimum.	F	P
Average duration of the route, s	23.15 ± 3.33	24.13 ± 2.56	24.30 ± 2.93	21.20 ± 3.66	9.082*	0.000

* $p < 0.001$

Discussion

The previously mentioned recommendations for correct working posture while driving suggest a significant (up to 40°) tilt of the seat back, which contradicts the results of the study Korakakis et al. (2019 and Siqueira Labrego et al. (2025), holding the steering wheel almost straightened in the elbow joints (angle $130\text{--}150^\circ$) with arms extended forward and acting on the pedals with legs bent in the knee joints to an angle of $120\text{--}150^\circ$ (Fig. 3).

In contrast, the results of our study of the working posture behind the wheel of the best drivers of the planet – winners of the World Rally Championship Kuvaldina et al. (2014) and Vynogradskyi et al. (2014), revealed that the parameters of their “landing” differ significantly from those shown in Fig. 3. At the same time, individual differences in the parameters determined by the mentioned scientists turned out to be statistically insignificant. In addition, all of them are calculated in angular units and do not depend on the total sizes or proportions of the body parts of specific drivers. Thus, athletes sit almost vertically – the inclination of the seat back is less than 5° , arms are bent at the elbow joints within a right angle, shoulders are lowered much lower, and the minimal horizontal inclination of the lower part of the seat allows you to act on the pedals with more straightened legs (Fig. 4).

The differences found between the parameters of the drivers’ working posture recommended in the literature and the parameters of the driving posture of the world’s strongest rally athletes require biomechanical analysis and comparison in order to assess their ergonomic efficiency.

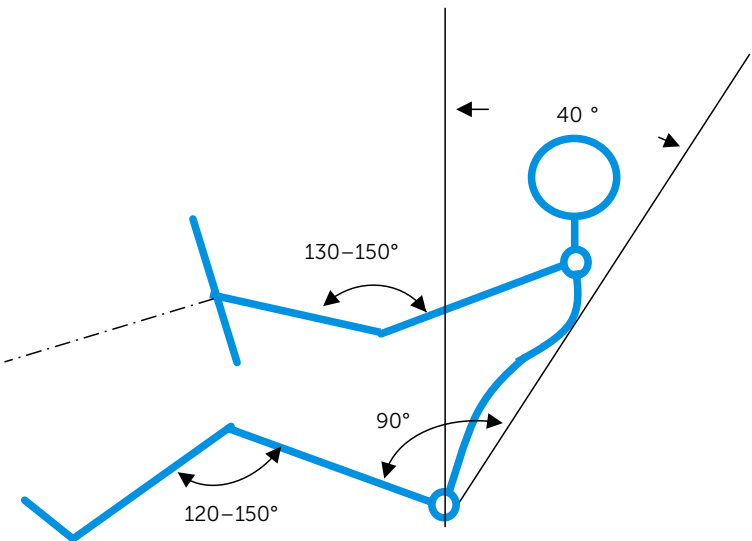


Figure 3 Averaged parameters of the working posture behind the wheel, recommended in the special literature

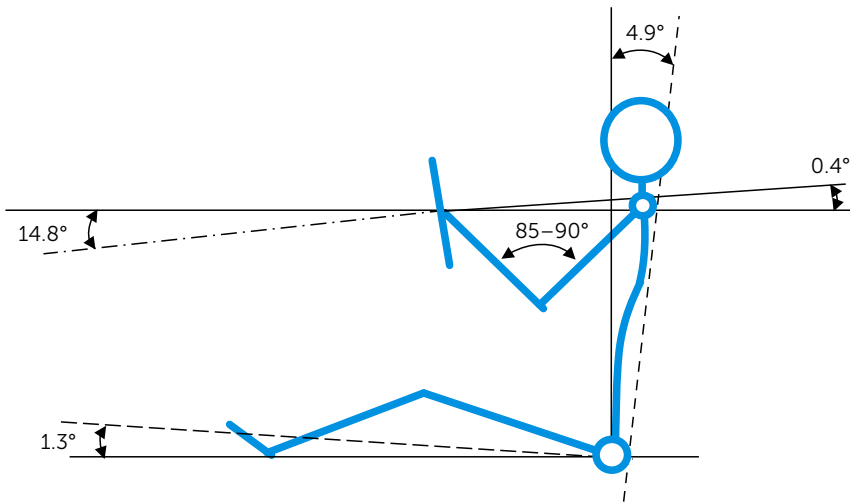


Figure 4 "Landing" parameters of the world's leading rally athletes

The posture recommended in the special literature (Fig. 3) is primarily characterized by pronounced thoracic kyphosis and lumbar lordosis, caused by a significant tilt of the seat back backward and the driver's attempt to reach the steering wheel, located far in front, with straightened arms. Due to the small lever of action of traction forces the functional muscle groups (FMG) of the shoulder flexors and forearm, caused by large angles in the shoulder and elbow joints, they cannot provide the proper effort to hold and rotate the steering wheel in emergency situations (hitting an obstacle, entering a rut, failure of the power steering, etc.). The driver is forced to keep his arms stretched forward in a horizontal position, which leads to increased tone of the corresponding FMG and rapid fatigue. To facilitate keeping his hands in this position, he begins to lean his hands on the steering wheel, which leads to increased load and fatigue of the FMG of the finger flexors, increased reaction time and reduced steering accuracy. Such a working posture causes increased tone of the FMG of the spine extensors, as well as hip flexors, calf extensors and foot flexors. Drivers, trying to ensure a comfortable body position in the cabin of civilian cars, first move the seat back to ensure that the legs are straightened for ease of operation with the pedals. Then they comfortably tilt the backrest back, but not being able to reach the steering wheel located close to the instrument panel, are forced to turn the seat forward, which leads to excessive bending of the legs and forces the muscles of the lower legs and thighs to be involved in working with the pedals, reducing the accuracy of regular working efforts and the magnitude of the maximum effort on the brake pedal in emergency situations (especially in the event of a brake booster failure). This causes accelerated fatigue of the corresponding FMG and a decrease in the accuracy of working with the pedals, which negatively affects active road safety.

The working posture behind the wheel of the world's leading athletes with an almost vertical inclination of the seat back, almost straightened legs and bent arms at the elbow

joints, holding the steering wheel located high and close to the shoulder joints, the axis of which is tilted up to 15° from the vertical downwards (Fig. 4) is characterized by reduced thoracic kyphosis and lumbar lordosis, as well as increased tone of the FMG of the cervical spine extensors, shoulder flexors and forearms. Their mutual arrangement provides a greater magnitude of the shoulder of application of the traction forces of these FMG, necessary for ensuring effective steering, working and emergency steering, and also significantly facilitates holding the hands in front of the body. This reduces the magnitude of the traction forces of the specified FMG, increases steering accuracy and reduces fatigue and the number of errors in driving a vehicle. This posture allows you to increase the tone and reduce the load on the FMG of the spine extensors, as well as the hip flexors, shin extensors and foot flexors of the more straightened leg, thanks to which the driver is able to press the corresponding pedals more accurately, and if necessary, much harder.

The results of electromyography of the driver's FMGs during turning the steering wheel in both directions in different working positions made it possible to substantiate its optimal location in terms of height, length and inclination of the steering wheel axis relative to the centers of the driver's shoulder joints, which allows applying precise and fast efforts to it both during the main and compensatory steering or understeering (Rybak, 2013), as well as maximum efforts during course maintenance of the car's movement when the front wheel hits the rut, the tire is damaged or the power steering fails.

The obtained data allow us to conclude that the "front" and "rear" landings do not allow the driver to maximize his potential in terms of steering, since the position of the steering wheel relative to the main anatomical points of their body does not allow the muscles of the corresponding FMG to provide the appropriate speed, strength and accuracy of contraction in these positions, including creating obstacles to intermuscular coordination. In contrast, the "average" landing, which is usually used in everyday practical driving by the drivers involved in the pedagogical experiment, and even more so its modification using the practical recommendations developed by us, made it possible to achieve a statistically significant difference in the time of performing the specified exercise, which requires perfect steering.

This position on a production car can only be achieved using certified spacers of different lengths between the steering wheel and the steering column. First of all, the seat base is installed more horizontally, then its distance to the pedals is adjusted according to the length of the legs. The seat back is set at an angle of up to 5° relative to the vertical, and then the steering wheel tilt and the height of the spacer between the standard steering wheel center mount and its new location are selected based on the length of the arms. The only parameter that cannot be set on a production car is a more horizontal steering wheel axis, the tilt of which is provided only by the design of modern sports cars.

Conclusions

Generally accepted traditional recommendations regarding the correct working posture behind the wheel of a car are biomechanically and ergonomically insufficiently substantiated. At the same time, the parameters of the “seating” of the world’s leading rally athletes, analyzed by us from the standpoint of ergonomic biomechanics, really make it possible to reduce the load on the main FMG of drivers while driving vehicles, increase the accuracy of steering actions, reduce the number of errors and postpone the onset of fatigue in time, which causes their rapid growth and the potential occurrence of emergency situations, thereby increasing the level of active road safety. In addition, the parameters of the working posture behind the wheel that we recommend make it possible to avoid or significantly reduce the severity of driver injuries in emergency situations. Therefore, they can be recommended not only for athletes and drivers of special vehicles, but also for professional drivers and amateur motorists.

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PROFESSIONAL DEVELOPMENT OF FOREIGN LANGUAGE TEACHERS IN NON-FORMAL ADULT EDUCATION PROGRAMMES

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ABSTRACT

Teaching adults differs from teaching children, which also applies to teaching foreign languages. Teachers that teach adults, adult educators (AEs), especially in non-formal education programs (NFEPs), often find themselves teaching adults by chance. Some of them are teachers by training, but there are many experts in their field who do not have a teaching background (e.g. are translators). In Slovenia, there is a limited body of research exploring the perspective of AEs teaching foreign languages to adults in NFEPs towards their professional development. The objective of this study was to address this gap. We were interested in which competencies AEs want to develop, what hinders them in the pursuit of professional development, and what encourages them along the way. In the study, semi-structured interviews were carried out with a convenience sample of AEs of foreign languages in NFEPs. Qualitative data obtained from the interviews were analyzed using thematic analysis. The results of the study showed that AEs recognize the importance of their professional development. They agree their competences would be best developed in training courses where they could exchange experiences with other AEs working in a related field (e.g. those who teach foreign languages to adults). They believe access to training for professional development is mostly hindered by the limited time they can devote to training and training that is not adapted to their needs. Foreign language AEs in non-formal adult education emphasize the need for tailored, practical professional development, peer collaboration, institutional support, and adaptable teaching methods addressing adult learners' unique needs.

Keywords: *adult educators, foreign language, non-formal education, professional development, thematic analysis*

Introduction

Adult education relates closely to the concept of lifelong learning (LLL), which encapsulates different types of learning (formal, non-formal, informal) and promotes the idea that there is no maximum age for learning. Although there are multiple possible ways to define LLL (Jelenc, 2016), LLL is a concept that states that we learn in various situations throughout our lives. Its goal is to enhance knowledge, skills, and abilities for

personal development and ultimately offering people of all ages the possibilities to fulfil their potential (UNESCO Institute for Lifelong Learning [UIL], n.d.). The approaches and methods used, as well as the skillset of adult educators (AEs) often differs from the approaches used in teaching children. Also, the settings in which adult education is performed may diverge from the regular school ones.

Adults in lifelong learning

Adult learners often turn to LLL to learn what they didn't have the opportunity to learn earlier in life, or to secure something better for themselves – a better job position, or lifestyle. Adult learners are a broad and diverse group that needs defining. One could say adults are people aged over 18 or 21 when reaching legal age. The Slovenian Adult Education Act (2018) defines adults as “*individuals who have completed their elementary school obligations and wish to acquire, update, expand, and deepen their knowledge*” (Article 2). The Act (2018) also states that anyone above age 15 may enrol in the Elementary school of adults (Article 8), which is why age 15 is sometimes taken as a reference age for adult learners. While choosing an official age for adulthood is difficult, adult learners have studying/learning traits that distinguish them from school children. Adults tend to be goal-oriented in their learning, reflecting on how and when to use acquired knowledge (Zavrl and Radovan, 2016). Their motivation to learn often connects to family, job, or adapting to life changes (Kump and Jelenc Krašovec, 2009). They bring past learning experiences (Cercone, 2008), developed personalities, fears, and concerns that influence their learning. They value classroom spirit (Letnar and Širok, 2014), come to socialize (Radovan, 2012), as well as to learn something new.

Non-formal adult education in Slovenia

Adult education in Slovenia is provided by various institutions, including high schools, universities, private institutions, and Adult Education Centers. Slovenia has 34 Adult Education Centers (Brezovec et al., 2023) offering programs for a wide range of adult learners. In addition to formal programs, they provide non-formal education aimed at developing competencies for improved work or life quality. Non-formal education, a cornerstone of LLL, differs from formal education in organization, classroom atmosphere, and certificates issued. It is typically carried out in form of workshops and courses of varying lengths (Zupanc Grom, 2013). Non-formal education is still planned and structured; mainly around content, goals, methods, and timelines (Hozjan, 2010). At least part of the content may be adapted to group needs (Zupanc Grom, 2013). AEs in non-formal education have more flexibility in curriculum, methods, and materials. Groups are smaller, and learners are usually motivated to participate and learn. Upon completion, adults receive certificates, which do not confer any degree (Hozjan, 2010; Zupanc Grom, 2013).

Non-formal education courses have fewer teaching restrictions, allowing institutions greater freedom in selecting AEs. They also cover a wide range of topics to meet adults' needs and interests, with foreign language courses being particularly popular.

Adults learning a foreign language

When learning a foreign language, adults may use different strategies than children. We often hear that it is best to start learning a language early. Muñoz (2010) explains that this idea originates from research focused on naturalistic language learning and has been overly generalized to foreign language learning, as more recent studies suggest this is only true if children are sufficiently exposed to the foreign language. Otherwise, the experience of schooling and learning in structured environments is considered an advantage for adults in learning a foreign language. Adults also draw from greater experience with their native language, which can sometimes aid them in acquiring a new language (Fujs, 2019). However, Deng and Zou (2016) highlight that adults' more developed personalities make potential limitations in learning more rigid than children's. Zavrl and Radovan (2016) note that younger learners have a better biological predisposition for language learning, but adults have certain advantages that enable them to successfully learn a foreign language. Adults possess a better understanding and knowledge of grammatical structures, the abstract thinking ability, they establish associations and connect experiences with language learning. The learning environment also plays a key role. Letnar and Širok (2014) emphasize the motivational importance of a pleasant classroom atmosphere and qualities such as kindness, professionalism, and resourcefulness in AEs. As no universal teaching method exists (Fekonja, 2016), AEs should consider adults' established learning strategies and their connection of new knowledge to personal and professional experiences (Miklič, 2018).

Therefore, AEs need a wide range of competencies, many of which may be developed through professional development. In fact, it is not uncommon for those teaching adults not to have a teaching background. AEs who teach adults are often professionals in a field, e.g. skilled translators, but have not learned how to teach in class. This creates unique challenges for AEs. They often teach diverse groups of adults varying in proficiency, motivations, and goals, demanding adaptability and creativity from AEs. To effectively meet these demands, continuous professional development is essential. Continuous professional development is crucial for providing strategies to enhance instruction, foster engagement, and address individual learner needs. Yet, AEs' training and professional development often receive little attention (Ioannou, 2023).

This article explores foreign language AEs' perspectives on professional development, examining the competencies they need, motivations for ongoing learning, and barriers they face. Given the limited literature on this topic in Slovenia, a qualitative study was conducted, using interviews analyzed with thematic analysis.

Methodology

Study design, study sample and setting

Due to the lack of research in this area, an exploratory approach to the data was used. The researcher used semi-structured interviews to collect the data and thematic analysis to analyze them. Descriptive statistics were used to describe the sample.

A convenience sample of foreign language teachers who teach adults in non-formal education programs was used in the study.

Qualitative data collection

Individual semi-structured interviews were conducted with the teachers via Zoom to facilitate the audio recording and later transcription of the interviews, as well as to facilitate scheduling an appropriate interview time. Interviews were transcribed with the help of the online tool Transcriptor (<https://transkriptor.com/>), later-on revised and corrected manually by the researcher. Interviews lasted 41 minutes on average. All interviews were carried out in the period of approximately two months in 2025.

The interview questions addressed the views of teachers on professional development; what hinders and facilitates it, who do they see as responsible for the professional development, which format of professional development they seek ... Part of the questions was aimed to shed light on the teachers' background. These data were left out of the qualitative analysis and used to describe the study sample.

The data were analyzed using thematic analysis. Thematic analysis is an inductive approach to analysis, moving from description into interpretation and "*telling an overall story of the data*" (Braun and Clarke, 2006, p.21). After familiarising with the data by re-reading it multiple times, the researcher creates nodes (i. e. keywords) that carry a meaning in the data. Gradually, the researcher merges the nodes into codes or sub-themes and themes that encapsulate all the data and provide insight in them or tell a story that is more than a summary of the initial information provided by the data.

In the present study, the researcher first read the transcribed interviews multiple times to familiarise herself with the data and get a general idea about the topics expressed in the interviews. Afterwards, the researcher coded the citations and statements addressing the same topic into categories. The category was named according to the citations it contained. Step by step, the researchers coded all the citations; if a citation did not fit into any of the existing categories, she created a new category. The researcher went back and forth between the transcripts, the citations, and the categories, sometimes moving a citation from one category to another and renaming the categories to better describe the encapsulated citations. Coding was an iterative process.

Once the categories were established and all the citation from the transcripts were contained by one of the categories, the researcher proceeded to check whether the categories could be connected into broader themes. At the end of the data analysis phase themes, subthemes and their descriptions were created.

Results

Participant characteristics

The sample consisted of 4 female and 2 male teachers (see Table 1). All teachers taught adults in non-formal educational programs. Two of the interviewees were teachers as their primary profession, they taught in regular high schools, one of them was primarily

Table 1 Study participants

Participant characteristic	<i>n</i> of participants (<i>N</i> = 6)
Gender	
Female	4
Male	2
Field of study*	
English	3
French	2
German	2
Italian	2
Pedagogy	1
Spanish	1
Education program**	
Formal	2
Non-formal	6

*Note. It is common to combine study fields in several universities, especially when studying foreign languages/translation.

**Note. Some teachers teach in different adult education programs.

employed in an administrative position, while three of the interviewed teachers were freelancers, working for different employers.

The teachers had between 2 and 30 years of teaching experience, with a median of 9.5 years (*IQR* = 15 years) of experience teaching adults. Two interviewees were teachers of Italian and English, one was a teacher of English and French, one a teacher of Spanish and French, and two taught German, although one of them also had a degree from pedagogy.

Thematic analysis

Two major themes emerged from the data, each with two subthemes, as shown in Table 2. The two main themes focus on the experiences AEs have teaching adults and how they can improve in their teaching.

Table 2 Themes and subthemes identified in interviews with key findings

Theme	Subtheme	Key findings
In a class-room of adult students (T1)	Professional(s) teachers (<i>sT1a</i>)	The AEs, initially inexperienced in adult education, faced fears, doubts, and lacked support. They discussed didactic methods they learned to use, they appreciate organisation (though they report a lack of it) and creativity the teacher role brings.
	Adult students are human, so am I (<i>sT1b</i>)	AEs recognize that adult students need different approaches compared to younger learners. They involve students in lessons, offer support and encourage them. AEs also emphasize the importance of creating a comfortable classroom environment, maintaining friendliness without crossing into friendship, and ensuring mutual respect.

Theme	Subtheme	Key findings
Learning to be better (T2)	Do and show (sT2a)	AEs learn through experience and prefer short, focused workshops that provide practical, concrete knowledge, reflecting their pragmatic approach.
	Motivated but supported (sT2b)	AEs acknowledge their responsibility to pursue future learning and express eagerness to grow. However, they desire more support, such as notifications and events tailored to their needs. They feel the investment, particularly in time, for current workshops often outweighs the benefits. Learning from peers in the same field is perceived as the most effective learning approach.

Note. T1 and T2: theme 1 and theme 2. sT1a: first subtheme of T1, sT1b: second subtheme of T1. sT2a: first subtheme of T2, sT2b: second subtheme of T2.

In a classroom of adult students (T1)

The theme In a classroom of adult students carries two subthemes. The first one, Professional(s) teachers, narrates about the beginnings of the AEs' careers.

Professional(s) teachers (sT1a)

Adult educators (AEs) pointed out that their initial classes were challenging due to their lack of teaching experience. Most had received little to no training in teaching methodologies, particularly for adult learners.

“And I had never even had any contact with teaching before, and the very first courses were something completely new.” (INT 2)

“I have never attended a course on how to educate adults.” (INT 3)

Teachers had doubts and had no one to turn to for help.

“So if I look at some of my beginnings, in the beginning, when I first got a job as a teacher in a language school, no one explained to me how to structure, say, an hour. There I was left to my own devices, although I had a mentor, whom I saw twice. I didn't get any feedback.” (INT 1)

The interviewees had solid language skills but lacked information on how to pass them on to others. They are professionals who have developed into AEs almost by themselves.

The AEs shared insights into the didactic methods they use and how they familiarize themselves with technology. Overall, they felt they were good at teaching, based on the feedback they received from their students. They emphasized the importance of making a class dynamic, engaging students actively, and frequently varying their teaching methods:

“Yes, I think I am quite good with these didactic approaches, I make sure that I change different activities and never sit, for example, this is one such thing that you are active all the time.” (INT 4)

AEs vary in their comfort level with technology. Although none of the interviewed AEs fear using it, some are more confident with it than others. Regardless they admit to the inevitable use of technology in their classrooms:

“I would absolutely say digital skills these days. It helps us teachers tremendously. But it’s also related to adults; they’re pretty much already involved in it. Definitely, the digital skills and the possibilities that all possible applications offer us today are a great help.” (INT 6)

In the interviews, AEs spoke about the importance of organization and structure. Interestingly, they feel that they are not as structured as they think they should be, but at the same time they appreciate these qualities in other teachers.

“So that’s one thing, for example, and consistency, which I can say for myself. I’m structured, I’m organized. Let’s say I can be organized, but at the same time, I can admire this consistency in the work of some, that they are so consistent with filling out paperwork, with preparations, and I need a little more self-control.” (INT 3)

While structure is important to AEs, they like teaching because it gives them the freedom to be creative and, especially in non-formal education, to be open to various methods.

“Because you can really be very creative, very independent in your work in a way that means a lot. Well, I can be very autonomous in teaching.” (INT 5)

The second subtheme of T1 gives us information about how adult students act in a classroom and how AEs approach them.

Adult students are human, so am I (sT1b)

Adult students require a different approach to them, the AEs reported:

“At a higher level, some kind of politeness /.../. This kind of ... respectful attitude, especially with adults, you can’t treat them like schoolchildren. These are grown people, formed persons. You should never interfere in sensitive areas of life.” (INT 4)

AEs know their students bring also their past experiences in class; therefore, they try to include them in teaching and are careful not to discourage the students from participating in class with being too eager to correct their mistakes. They try to find a way to connect with them.

“So if they came to this course, they came voluntarily. So we conclude that they are interested in this culture, in this language, where it comes from, many travel /.../ Get close to them [the students], that they will be comfortable during the lessons. When you impart this knowledge of the language, to not do so with rigor...” (INT 6)

They realize that adults learn language in a different way than children do.

“Especially with adults, also grammar helps, because they usually need a certainty. It’s not enough just to be. You talk and that they stay and that the language remains just some I’ll say, like a mixture with no rules, just some string of phrases – that’s not enough for them.” (INT 2)

AEs understand that their students have a lot going on in their lives and are willing to take time to study, and they respect that. AEs try to be friendly, open and relaxed with their students, they feel this is what works best with adult students:

“What is really interesting is that those little things that we add. When I think I’m doing this, I see that the motivation goes up, not because they see, he’s [the teacher] interested, he cares that I know something. It’s not me who works all the time, I try to basically be there for them, but they’re responsible for making sure they learn something.” (INT 3)

However, AEs still expect and require some distance and respect from their students and may struggle to maintain an appropriate distance:

“I just act like a human being, like their friend. At the end of the day, I see the matter more like that, although at times it beats me because people don’t know how to set boundaries sometimes.” (INT 2)

Despite already being formed AEs, the interviewees discussed their perspectives on further education.

Learning to be better (T2)

In the interviews, AEs reflected on their professional development opportunities. They agreed that they learn best through straightforward, concrete activities. While they acknowledged that time constraints and financial challenges might limit their ability to pursue such opportunities, they felt it was primarily their responsibility to seek professional development. However, they emphasized the importance of receiving support in this endeavor.

Do and show (ST2a)

AEs and teachers in general are under a lot of time pressure and dislike being trapped in workshops where they feel they are wasting their time. They appreciate short workshops that convey practical knowledge that they are immediately being able to use:

“What I’m really interested in is concrete things that I can use. I am an operative and it seems to me that whatever I go to study, it makes sense and I can use it in my work. This is very important to me, which is why I am not attracted to certain theoretical matters.” (INT 5)

Some of them also expressed the feeling that something should change if they attend a course, that they should benefit from it in a significant way:

“That motivation, I think, we are usually pragmatists and we always weigh whether it is worth it or not. Well, because someone, for example, will see that if he does a good job with his method and it’s getting paid the same. This should be enough in a way, right?” (INT 2)

Finally, AEs sometimes feel they have to put a lot of extra work to understand and be able to use what they learned. Often, they have no one to turn to for help, when they encounter problems that they cannot solve.

Motivated, but supported (sT2b)

In interviews, AEs often referred to their motivation to learn:

“I’m one such very learning person, and I always think I don’t know enough. Some refinement is always welcome, because there’s always something new, and sometimes certain things that we learned years ago, but sometimes it’s good to look back a little bit again and say to yourself, oh, yes, I’ve not been in that direction for a while now /.../. One can’t rest on their laurels and do the same thing all the time. This also brings some new energy, some new knowledge into what you do every day.” (INT 5)

They are also willing to take the first steps if they feel they need improvement, or a certain skill set will ease their work:

“No one offered it [a certain course] to me. I wanted it, and I paid for it, which is quite expensive. Because I was truly interested in it, and I saw that there was a real need for it, and actually, it was very useful.” (INT 6)

And they feel it is imperative they act and play an active part in their professional development:

“Here I would say that it’s kind of shared, I can think that this is how the task of the institution is, to give some initiative, but also the teachers have to be engaged, that they want to. Now everything is free, if a lecture and discussion is organized, then there is no interest, then it is up to both of us. That’s how I see that responsibility.” (INT 1)

Despite recognizing the time and financial issues of attending workshops and similar activities, AEs put in the first place the lack of a proper support system in hindering their professional development.

“Now, in my opinion, if they see in this additional education, they don’t get anything concrete. So, if in return, I don’t know, or they don’t get any some promotion points or whatever, they are probably self-sufficient enough.” (INT 2)

They further develop their thoughts on how the existing reward system may fail to adequately reward all teachers as well as to reward what needs to be rewarded (new knowledge, higher quality of teaching etc.):

“The other obstacle is the scoring all of these projects, which in the end we all do for money, and I find it unfair in certain cases, that only the one who is the project promoter gets, let’s say, some points, but he has a team of people working hard for it in the background, and they don’t get anything. Here it seems to me that things are not going in the right direction and then people just prefer not to do

it. I see this a lot, even with colleagues, that it's not right. We all learn a lot from projects and these are valuable experiences, but those who participate must also be appropriately rewarded, because this is extra work and really, we teachers are very busy.” (INT 5)

AEs agree the best way to learn is from competent others. They are eager to exchange experience with their colleagues, who must come from the same field (e.g. be language teachers themselves), who have experience working in the classroom and have ideas about how to solve concrete issues that arise in the classroom:

“Who knows how to give you some instructions on concrete examples, so that you can actually get help from lectures, because someone is just lecturing you on what would be nice and how it would be good and that they have no concrete experience of absolutely nothing.” (INT 6)

At the same time, they encourage institutions to foster connections, giving them opportunities to meet other AEs in their field. In adult education, AEs often teach their scheduled hours and leave immediately after, they do not have a group of colleagues to discuss challenges or collaborate on solutions. Left largely to their own devices to find a way to work around what bothers them, they urge institutions to:

“Connect with each other and organize some congresses and meetings. I don't know, once one school would host someone else, let's say this one, maybe not so much formally, but to some informal association with sharing of experiences, workshops.” (INT 3)

Peer collaboration was mentioned very often over the interviews.

Discussion

General

This study examined professional development of adult educators (AEs) who teach foreign languages to adults in non-formal education programs. Semi-structured interviews used to collect data were analyzed through thematic analysis. Two key themes emerged: the role of adult educators in classrooms and their need for professional growth and support.

AEs reported entering the profession with little prior knowledge about teaching adults, developing expertise through practice. They expressed a need for early-career mentorship and have since adapted various strategies, methods, and materials to meet students' needs, including fostering engagement, co-creating learning experiences, and addressing students' desire for structure and logic (Fekonja, 2016; Miklič, 2018; Zavrl and Radovan, 2016). Respecting students' experiences, teachers create a welcoming environment and focus on motivation over mastery by leaving room for mistakes and correcting them gently (Cercone, 2008; Letnar and Širok, 2014).

Professional development is important to AEs. They feel that the most important factor influencing their participation in professional development activities is the motivation of the AEs. If motivated, they will actively seek out opportunities and are willing to pay for them if they feel they will benefit from them. However, they define themselves as pragmatists, meaning they will attend a professional development activity if they see value in it. AEs have busy schedules with little time to spare and do not like wasting it on boring, overly theoretical courses led by academics with no classroom experience. They prefer concrete knowledge they can use immediately. Adult educators want to share experiences with colleagues in similar settings, compare methods, and solve specific issues. Because of time constraints, these activities should be short and repeated only a few times yearly. When learning a new skill, teachers want to see it in action, learn it on the spot, and understand how to implement it. They also feel they would benefit from technical support in the first weeks of applying what they have learned, in case they encounter problems.

Despite being motivated to pursue professional development, AEs do not feel supported in doing so. They see a major problem in recognizing the extra work they do – whether it's the effort they put into teaching or projects they undertake. AEs find little value in learning new methods or attending projects unless it significantly improves their teaching performance or includes additional pay. Their usual teaching receives excellent feedback from students who attend voluntarily, engage actively, and participate enthusiastically. This makes AEs question investing time and effort in activities without notable impact. They believe learning something that simplifies classroom tasks – like motivating adults, communicating effectively, or structuring lessons – would be worthwhile, especially during early stages of their teaching careers. AEs feel that learning new skills or integrating tools like digital classrooms or educational videos demands considerable extra time. Time pressure seems to be the most significant factor hindering participation in professional development. Educators also highlight an uneven evaluation system; team members involved in projects do extra work without earning promotion-related points. Generally, AEs feel professional development requires more investment than it delivers. Yet, they remain curious and eager to learn new things, maintaining a practical approach to their work.

Finally, AEs see the role of institutions as bringing teachers together by providing a place and time for them to meet. They feel that there is a general lack of events tailored to the needs of AEs, especially if they are language professionals who do not teach in regular schools. They would like the institutions they work with to be willing to (partially) fund the workshops they attend, as some of them may be pricy. AEs are eager to learn from others in their field and encourage institutions to network more, to organize useful events and to let AEs know about them.

Strengths and weaknesses

First, despite the data repeating themselves over the course of the interviews, which means data saturation was achieved the sample of teachers is relatively small. Secondly, all the interviewees were language teachers, which limits the possibility to generalize

the findings to all AEs. The predominant teaching experience was related to teaching in non-formal programs, usually attended by adults motivated to learn the chosen language, which may influence the teacher's classroom work and affect their professional development needs. Finally, all the interviewed AEs teach in the same adult education center, and all of them teach multiple groups in multiple jobs, therefore it might be reasonable to assume that there are underlying similarities between the teachers that influence their perspectives. This study sought to raise questions rather than provide definitive answers, yet some suggestions are proposed in the next section.

Implications for further research, practice and policies

More educational activities are needed to equip adult educators (AEs) especially at the beginning of their careers with the skills to navigate the classroom – how to engage students, interact with them, and explain concepts effectively. Integrating these topics into regular teacher training programs at universities could be a valuable step forward. When designing professional development activities, they should be practical and focus on specific, concrete topics with clear instructions on applying the knowledge in the classroom. Organizing (non)formal gatherings where AEs can exchange experiences, provide support, and offer suggestions to one another would be an excellent practice. Tailoring professional development to specific needs AEs have is essential.

All activities must remain short to respect AEs' time. Accessibility is crucial, requiring affordable prices for AEs employed in schools and freelancers alike. Additionally, a fair reward system is necessary. While teachers in schools earn career advancement points for attending workshops, the current system ties these points to workshop length. AEs prefer short, concise workshops with immediate benefits and consider lengthy seminars a waste of time if they fail to significantly enhance their performance. AEs also believe that participating in projects should be rewarded equally, as the current system only credits project leaders. Other team members face extra work to carry out the projects while handling their regular tasks, often without recognition or bonuses. This issue poses a challenge for schools and adult education centers to address.

Finally, AEs would benefit from extended support after professional development workshops. Such support would allow them to apply their learning in practice, seek guidance when needed, and navigate their learning process more effectively.

Conclusion

This study focused on perspectives of foreign language educators in non-formal education programs (NFEPs) for adults. Adult educators value professional development but feel unsupported, lacking events tailored to their specific needs and an adequate reward system. They prefer short, practical workshops and feel the best way to learn is from colleagues working in similar fields, while dislike theory-focused, time-consuming activities. Educators prioritize staying connected to the language they teach and fostering respect and encouragement in their learners, focusing on engagement. They recognize

adult learners' unique needs, incorporate their experiences, and utilize diverse teaching methods, including the increasing use of technology. Few educators had prior training in teaching adults, highlighting the need for early-career training and mentorship. They see future adult educators as requiring strong technology proficiency, communication, and soft skills. Institutions that offer NFEPs for adults are viewed as crucial for organizing events to facilitate experience-sharing among educators.

Despite the rather small convenience sample, the study results offer a valid starting point for both future research and the changes needed to happen on a systemic level.

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SYSTEMIC INTERNATIONAL MOBILITY IN SECONDARY EDUCATION IN LATVIA FROM 1964 TO 1985

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ABSTRACT

This paper explores international mobility in Latvia from 1964 to 1985, focusing on the role of International Friendship Clubs as key instruments of Soviet-era educational internationalization. Using qualitative analysis of archival documents and quantitative culturomics analysis of newspaper articles, it examines how mobility was integrated into the education system and aligned with broader political and ideological objectives. While official cooperation with both Soviet and non-Soviet countries began in the 1950s, large-scale mobility only materialized following partial liberalization in the mid-1960s. International Friendship Clubs became prominent tools of cultural diplomacy, fostering youth exchanges, correspondence, and ideological education, albeit primarily within the Soviet bloc. Despite limited outbound travel opportunities, International Friendship Clubs symbolically promoted the Soviet image as a peaceful, cooperative power. In Latvia, International Friendship Clubs uniquely served to counter the influence of the Latvian diaspora abroad. Cross-border mobility was rare, with most exchanges taking place within Soviet republics under strict state security oversight. Students typically engaged in remote interactions such as letter and souvenir exchanges, while teacher mobility occurred only in structured, multi-professional delegations. Peaks in International Friendship Clubs media coverage, particularly in 1972 and 1982, coincided with key political events, underscoring the clubs' role in state propaganda rather than reflecting genuine grassroots engagement. Overall, internationalization in education during this period was centrally managed, ideologically driven, and strategically employed to reinforce Soviet narratives both domestically and internationally.

Keywords: *International Friendship Club, educational mobility, propaganda, intelligence service control, media coverage*

Introduction

International mobility and other forms of internationalization have become an integral part of the educational process since the onset of globalization. Participation in such activities – both historically and in the present day – has been associated with enhanced academic and professional outcomes. For students and faculty alike, international

engagement is increasingly recognized as a strategic component of modern education, contributing to broader competencies and future opportunities.

At present, Erasmus + is the most extensive program in this field. Latvian statistics indicate that the majority – 67% – of the most active participants in the Erasmus + program are regional and less privileged schools. (VIAA, 2024). Their representation among the most active and successful participants is significantly higher than that of prestigious schools, which are primarily located in the capital or hold the status of state gymnasiums. One of the reasons for this is the Erasmus program's approach and official priorities, which ensure equal opportunities for all active participants. This approach often gives advantages to less privileged students and teachers by prioritizing their access to Erasmus mobility opportunities (European Commission, 2021).

Although contemporary forms of mobility are far more accessible and widespread, they are not a radical innovation in Latvian schools. It is important to view the use of such learning activities in historical perspective, laying the groundwork for further development, the rational use of available resources, and a calibration of the Erasmus programme's role in the public sphere.

The widespread availability – at least declaratively – of internationalization and educational mobility activities in Latvia began in the late 1950s. However, genuinely large-scale engagement only became possible with the partial liberalization of the Soviet Union (USSR) in the mid-1960s (Kuts, 2010). As such, research into this period is essential for understanding the systemic flaws that previously hindered mobility.

A thorough analysis of the Latvian education system's past experience is necessary to identify key turning points where the effective use of mobility as part of the educational process became aligned with broader political and ideological objectives.

The paper is aimed to analyze different types of international activities used in 1960s–1980s Latvian Soviet Socialist Republic (LSSR), taking into consideration the historical context, as well as to check how politically biased the historical activities were.

Historical background

The period from 1964 to 1985 in the Soviet Union, primarily under the leadership of Leonid Brezhnev, was characterized by stability, stagnation, and growing societal problems. After Nikita Khrushchev's removal in 1964, Brezhnev's government adopted a conservative approach, focusing on maintaining order and avoiding dramatic reforms. This “era of stagnation” saw a slowdown in economic growth, inefficiencies in centralized planning, and persistent shortages of consumer goods, despite significant investments in industry and infrastructure.

Socially, there was increasing openness to global cultural exchange, especially after the Helsinki Accords in 1975 (Rupprecht, 2015), but alienation and dissatisfaction also spread. Intellectuals and ethnic minorities, especially Soviet Jews, expressed discontent, and many emigrated during this time. Politically, the leadership was stagnant, with an aging elite resistant to change.

Soviet foreign policy was marked by Cold War tensions, culminating in the costly and disastrous invasion of Afghanistan in 1979, which damaged the USSR's international prestige. The arms race with the United States further drained resources, highlighting systemic weaknesses (Riasanovsky & Steinberg, 2019).

During this period, Latvia underwent significant transformations as part of the Soviet Union, affecting its economy, politics, culture, and social structure. Following the successive occupations of Latvia – first by the USSR (1940–1941), then by Germany (1941–1944) and culminated in Soviet re-occupation in 1944, with Latvia's incorporation into the USSR already proclaimed in 1940 (*Deklarācija Par Latvijas Okupāciju* [Declaration on the Occupation of Latvia], 1996), this era was marked by intense industrialization, urbanization, demographic challenges, political control, and suppression of national identity, while also preserving elements of resistance and revival. Industrialization became the foundation of Latvia's economic policy. Industry was concentrated in Riga and its surroundings, producing about half of the republic's industrial output. While factory construction provided thousands of new jobs, it also brought major challenges. Due to a shortage of local labor resources, migrants from other Soviet republics – mainly Russia, Ukraine, and Belarus – flowed into Latvia. This wave of migration significantly altered the country's demographic composition, reducing the proportion of ethnic Latvians, especially in cities (Bleiere et al., 2005).

The agricultural sector experienced gradual modernization during this time, although its efficiency remained limited. Collectivized farms – *kolkhozes* and *sovkhazes* – became dominant in the rural economy. Although subsidies and technological improvements increased productivity, collective farms often failed to compete effectively with pre-war agricultural structures. However, urbanization and industrialization led to population decline in many rural areas as people moved to cities in search of jobs and better living conditions. In contrast, the 1980s saw a slight reverse trend, as some city dwellers returned to the countryside for better living space and employment opportunities (Bleiere et al., 2005).

Politically, Latvian society was under strict control. The number of members of the Latvian Communist Party increased, and Latvian representation within the party gradually grew. Possessing a party membership card became necessary for a successful career, although party affiliation was no longer closely tied to ideological commitment. Political opposition was harshly suppressed, and dissidents faced repression. At the same time, the Latvian dissident movement was mainly focused on the struggle for national self-determination rather than solely on human rights, as was more typical in Lithuania and Estonia (Bleiere et al., 2005).

In the foreign policy context, Latvia was closely linked to the Soviet Union's global ambitions. The Baltic Military District headquarters was located in Riga, and the republic was militarized, becoming strategically important for Soviet military policy. The war in Afghanistan, which began in 1979, also caused dissatisfaction in Latvia, as thousands of Latvians were drafted into the Soviet army and sent to the conflict, from which many did not return or came back traumatized (Bleiere et al., 2005).

This was an extremely complex period in Latvia's history, when the foreign and domestic policy context had a particularly strong and pronounced impact on international relations, including in the field of education.

Methodology

This paper employs qualitative and quantitative analysis of historical sources and data, focusing on the role of international mobility, both real and remote, in general, and activities of International Friendship Clubs in particular, in the period of 1964 to 1985. The total number of 39 non-structured, segmental and scattered document sets were analyzed using document analysis (Bowen, 2009), case-study research (Flyvbjerg, 2006) and elements of critical discourse analysis (Fairclough, 2010). The major qualitative part was to find evidence of student and teacher mobility, its integration into educational system, and its real role in secondary education and society. National Archive documents used were typewritten or handwritten.

Quantitative analysis of 63 media outlets was performed using Culturomics approach (Michel et al., 2011) to correlate the intensity of publications to historical events in the timeframe of research. *International Friendship Club* and its iterations were used as a keyword in Latvian and in Russian. Some data selection required manual sorting out since the optical character recognition system of national newspaper archive gave certain percentage of false output.

Results

At the outset of the period under analysis, it is evident that intensive cooperation and mobility activities were undertaken with a wide range of countries. Latvian institutions, including general educational establishments, engaged not only with nations from the Soviet bloc but also with third-world and Western countries (Popova, 1971; Šneidere, 1981), thus fostering diverse international exchanges of experiences and ideas. This collaboration primarily relied upon USSR-supported friendship societies, providing structured frameworks operating across state, republic, and municipal levels (Biron, 1964).

The Latvian and Foreign Friendship and Cultural Relations Society was established on January 27, 1956, initially as the Latvian branch of the All-Union Society for Friendship and Cultural Relations with Foreign Countries and renamed in 1958. Its mission involved fostering international cooperation in science, arts, literature, tourism, sports, and other domains. In the 1960s, the society actively engaged with the Latvian diaspora, conducting counter-propaganda activities in cooperation with the Committee for Cultural Relations with Compatriots Abroad. The organization's leadership was closely affiliated with the State Security Committee (KGB), utilizing the society for propaganda and managing international contacts (VDK Dokumenti [KGB documents], n.d.).

A significant imbalance characterized international mobility within these cooperation frameworks, with incoming visits substantially outnumbering outgoing visits from Latvia.

For instance, in 1965, arrivals from the German Democratic Republic (GDR) totaled 2,637 individuals, accounting for over half of all international visitors participating in friendship and cultural programs. Conversely, only a few dozen individuals traveled from Latvia to the GDR, highlighting structural differences influenced by the period's socio-political conditions and restrictions on international travel for Latvian citizens (Biron, 1965).

This mobility dynamic is exemplified by specific events. In April 1964, the Latvian Friendship and Cultural Relations Society, alongside other organizations, extensively commemorated Shakespeare Days. On April 14, an event at Latvian State University featured participation from 40 English teachers and 20 English schoolgirls, attracting approximately 1,000 attendees. The society facilitated extensive activities, including professional meetings, lectures on Soviet education, and guided visits to educational institutions, with similar, albeit smaller-scale engagements occurring with groups from England and Scotland (Biron, 1964). Documentation regarding outbound student or teacher mobility from Latvia during this period remains notably scarce (PSRS-Dānija pārskti [USSR-Denmark activity reports], 1986, Popova, 1971).

Parallel to these societies, the International Friendship Clubs (IFCs) emerged as integral components within educational systems, particularly in schools with specialized foreign-language curricula. IFCs originated in the late 1950s following the 1957 VI World Festival of Youth and Students in Moscow, which facilitated direct international youth interactions. Friendship societies established in 1957 significantly contributed to broad societal involvement in international cooperation. Furthermore, the establishment of the International Committee for Children's and Adolescents' Movements (CIMEA) in 1958, encompassing 58 countries across various geopolitical regions, aimed at fostering international solidarity among youth. Concurrently, the Soviet Peace Fund, founded in 1961, furthered peace, charity, and international cooperation, funded primarily through public and institutional donations (Kuts, 2010).

Mobility activities within IFCs primarily targeted intra-Soviet collaboration, though contacts with foreign entities were also established. Mobility included short-term interactions, correspondence, delegation exchanges, and strategic, long-term cooperative initiatives such as "Friendship Festivals." These festivals actively engaged students and teachers from multiple Soviet republics, fostering cultural exchanges and establishing enduring collaborative relationships through reciprocal visits, reflecting centrally organized programs emphasizing intercultural dialogue and ideological education (Rozeniece, 1982; Krūmiņa, 1982).

Correspondence and souvenir exchanges constituted the primary mode of IFC interaction, functioning as significant remote-mobility equivalents due to stringent restrictions on international travel, especially for minors. Correspondence activities facilitated cultural insights, mitigating the lack of direct international exposure. Additionally, guest receptions and international contact formation required thorough regulatory scrutiny (Inte, 1982).

Consequently, IFCs operated as structured mechanisms enabling regulated international engagement, significantly contributing to both cultural diplomacy and ideological objectives within the political context of the era.

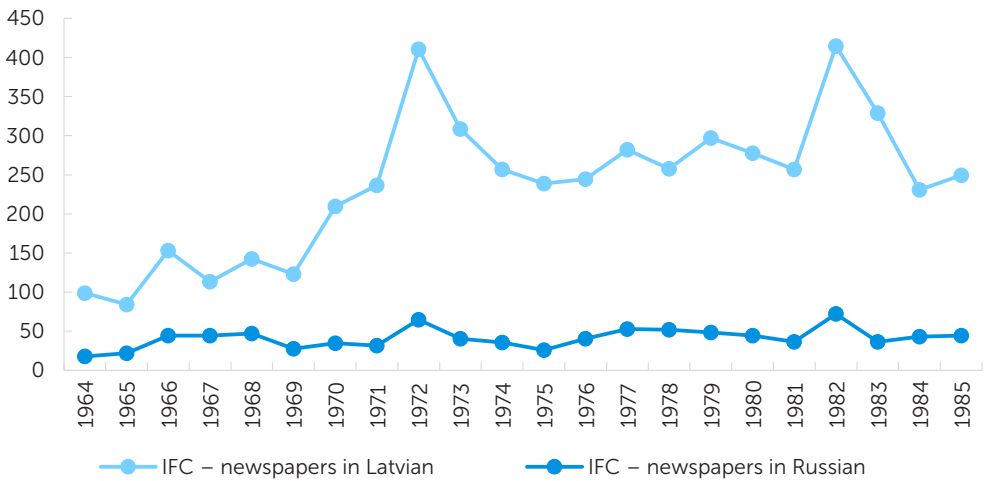


Figure 1 Number of publications on IFCs

The widespread and systematic nature of IFCs in Latvia is thoroughly documented in Latvian periodicals. Between 1964 and 1985, IFC-related activities were mentioned in 6,124 unique publications – 5,216 in Latvian and 907 in Russian – highlighting their significant role in international cooperation, cultural exchange, and ideological dissemination. IFCs visibility notably intensified from 1970 onwards, with coverage appearing nearly daily. Peak years occurred in 1972, with 475 articles, and in 1982, with 487 articles. Such prominence underscores the state-coordinated integration of IFCs activities into the daily societal routine and demonstrates the extent of governmental efforts to embed international friendship into public consciousness (Periodika, n.d.).

However, these peaks – amounting to more than two publications daily in a typical daily newspaper schedule – do not necessarily indicate genuine popularity or grassroots support for IFCs. Instead, they reflect the targeted use of state-controlled media to propagate specific ideological and political narratives. This extensive coverage served to reinforce the Soviet Union’s official stance on international relations and its self-image as a peaceful and cooperative global actor, even if public reception was not uniformly enthusiastic (Figure 1).

This pattern aligns with broader media policy shifts occurring around 1965, following the abolition of newspaper subscription limits in the Soviet Union (TASS, 1964). While newspapers were nominally encouraged to compete in the early 1960s, actual popularity was largely predetermined by state planners. USSR Premier Alexey Kosygin’s economic reforms subsequently permitted circulations to fluctuate according to demand, offering journalists clearer indications of actual public interest. Despite this shift, the content of state-controlled newspapers continued to reflect central planning and ideological priorities, particularly during politically significant periods (Huxtable, 2013).

The two notable peaks in IFC coverage corresponded with significant historical contexts where increased promotion of internationalization supported explicit Soviet political objectives.

The year 1972 marked an apex of *détente* (*razryadka*), reflecting heightened international cooperation between the Eastern and Western blocs. Beginning in 1969, sustained efforts to reduce Cold War tensions culminated in landmark diplomatic achievements by 1972: the Strategic Arms Limitation Talks (SALT I) treaty was signed during the historic Moscow Summit attended by U.S. President Richard Nixon – the first visit by a sitting U.S. president to the USSR. Further international agreements signed that year included the Biological Weapons Convention and the Anti-Ballistic Missile Treaty, and discussions on SALT II commenced. Domestically, these diplomatic successes were extensively covered to illustrate the USSR's commitment to peace and stability (Sell, 2016). Additionally, 1972 coincided with the widespread celebrations marking the 50th anniversary of the Soviet Union's founding, reinforcing IFCs' importance in promoting Soviet achievements and international solidarity.

The subsequent sharp decline in IFC-related publications in 1973 highlights the instrumental and strategic nature of these organizations within the broader propaganda context rather than sustained organic popularity.

Similarly, the 1982 peak corresponded with concerted Soviet efforts to restore and bolster its international image domestically following significant geopolitical setbacks: the 1979 invasion of Afghanistan, international criticism following the 1980 Moscow Olympics boycott led by Western countries, and the imposition of Martial Law in Poland in 1981. Against this backdrop, Soviet authorities intensified domestic propaganda to reinforce the USSR's narrative as a global leader committed to peace and cooperation (Sell, 2016). Moreover, the 1982 celebrations marking the 60th anniversary of the USSR's establishment provided an additional platform for promoting the virtues of international friendship and cooperation, thus explaining the increase in IFC-related coverage.

Publicity increase in 1982 significantly misrepresented the real situation in the field of international cooperation since lots of planned activities in this field were canceled (PSRS-Zviedrija pārskati [USSR-Sweden activity reports], 1986).

Following Leonid Brezhnev's death in late 1982, Yuri Andropov's more conservative governance curtailed certain ideological and liberal initiatives, including a diminished emphasis on international friendship as a central propaganda theme. This shift contributed significantly to the gradual decline in IFCs prominence and coverage in subsequent years, reflecting broader changes in Soviet domestic policy and ideological messaging.

Discussion

The course of this research showed that media coverage of IFCs activities is highly politically biased and connected with activities of security agencies. Public access to such archives in Latvia is highly limited mostly to their absence, and the major sources for that are in Russia.

The other challenge is that there is no precise evidence found that real student foreign mobility occurred. All of the traveling references related to intra-USSR mobility or those facts mentioned in an abstract way (PSRS-Dānija plāni [USSR-Denmark plans], 1988; Popova, 1971; Volodkevych, 1971).

This research also highlighted the problems of the major Latvian periodical archive *Periodika.lv*, since approximately 19% search of output was false, due to imperfect optical character recognition system, and not connected with the input keywords. In future there is a perspective of in-depth analysis of all 6000 articles which possibly will recreate the propaganda framework of IFCs in media, which could be useful in other areas. As well as the more comprehensive analysis of ideological and upbringing guidelines of this period is required, and it should be connected with the IFCs public promotion evidence.

Another important challenge to be explored in the future is correlation between IFCs spreading in the rural communities of Latvia, and its unique role in contrast to IFCs in other parts of USSR, since Latvia had relatively biggest number of natives in exile after the end of World War II (Plakans, 2023). Large amount of the KGB work in Latvia was related to propaganda and counterpropaganda in this field (Šneidere, 1980; Šneidere, 1981; Baranovskis & Brolišs, 1981), so the direct and indirect influence on the schools should be explored.

Conclusions

- International Friendship Clubs served as platforms for international mobility and were widely prevalent, essentially functioning as a compulsory educational component in schools.
- Actual international mobility was infrequent, and the majority of IFCs members were not granted permission to travel abroad. Nevertheless, mobility opportunities within the USSR were common and extensively utilized among various republics.
- International teacher mobility occurred exclusively within organized groups. Typically, these groups were heterogeneous, including professionals from various fields, and the mobility programs encompassed activities beyond merely educational exchange.
- Within the USSR, opportunities existed for short-term simple and exchange mobilities among students, as well as professional exchanges and job-shadowing mobilities for teachers.
- The only realistic opportunity for students to establish international contacts involved exchanges of letters and souvenirs.
- Teachers did not have the option to select their partner organizations for mobility activities.
- Remote mobility initiatives also involve the exchange of educational materials and souvenirs.
- All contacts with foreign entities were closely supervised by the KGB.
- Latvia was a special case of implementation of IFCs practice among other Soviet republics since one of their main missions was not pure promotion of international connections, but opposition to the influence of Latvians in exile.
- Media coverage of educational practices and organizational forms was extremely important for the state. The role of the schools in upbringing was clear to society.

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RESEARCHING SEXUALITY EDUCATION FOR FAMILY FORMATION IN LATVIA: QUESTIONNAIRE DESIGN AND VALIDITY

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ABSTRACT

The project “Promoting sexuality education for family formation in the Latvian education system” aims at exploring the understandings and needs in the Latvian education system regarding sexuality education for family formation (SE4FF). Given the need for a scientifically based research tool addressing SE4FF in the Latvian context, the research questions guiding the study were: RQ1: What are the topics to be included in a scientifically based survey questionnaire to investigate SE4FF in Latvia in a culturally sensitive way? RQ2: Which items should be included under each topic in such a questionnaire? RQ3: Which is the reliability level of the final version of the questionnaire?

To address RQ1 and RQ2, a systematic methodological approach based on questionnaire design research was used. It included extensive preliminary research, elaboration of the initial draft, piloting and finalisation. The reliability check (RQ3) was done using Cronbach’s alpha, based on 1197 answers received in Spring 2025.

Five thematic areas were included in the questionnaire: (1) family values; (2) approaches to sexuality education; (3) sexuality education at school, including 4 subsections (school topics, sexual relationships at school age, school-parent cooperation, and teacher training); (4) needs in the education system; and (5) examples of good practice. The final questionnaire included 55 items, including 6 open questions. Item formulation was based on national and international scientific literature, current social and political debates, the current sexuality education provision in Latvia and the Latvian historical heritage (1918–1939). The overall reliability of the scale items of the questionnaire was high ($\alpha = .865$, 46 items).

The discussion addresses the questionnaire’s face validity, content validity, construct validity and contrast validity. The findings support the potential of the new questionnaire as a valuable tool for future research on SE4FF with further possible applications in sexuality education curriculum, teacher training and school-family partnerships.

Keywords: *Education for family formation, sexuality education, family values, survey design, questionnaire validity*

Introduction

The institution of the family is an important value for the people of Latvia. The Latvian Constitution states that “The State shall protect and support marriage – the union between a man and a woman, the family, the rights of parents and children” (par. 110). One of the tasks set for the Latvian National Development Plan 2021–2027 is “strengthening the family as a value in society, including [...] improving youth education and raising public awareness on parenting skills, relationship literacy, family and marriage ... for the sustainable growth of the nation”. However, the situation of families and demographic dynamics are worrying. The total population of Latvia dropped from 2.4 million in 2000, to 1.9 million in 2024 (Central Statistical Bureau of Latvia, 2024, 26–34). In 2023 there were 504 divorces per 1000 marriages, and in January 2024 45.8% of families had one parent with one or more minor children (Central Statistical Bureau of Latvia, 2024, 55–67). Therefore, there is a need to reinforce in young people the necessary values and attitudes for the formation of strong families to ensure Latvia’s sustainable development, and the education system has a key role to play in this regard.

In recent scientific research in Latvia regarding sexuality education (Grīnberga, 2023; Ķīvīte-Urtāne et al., 2023; Mileiko et al., 2016; Papardes zieds, 2022), the issue of family formation is largely absent. In addition, the current dominant approach in sexuality education policy and practice in Latvia purports mostly a liberal worldview. In order to reinforce democratic values, there is a need to diversify the educational offer with research-based perspectives supporting sexuality education for family formation, so that parents and teachers can choose from different well-founded alternatives representing different worldviews.

In this context, the project “Promoting sexuality education for family formation in the Latvian education system” (2024–2026)¹, implemented at the University of Latvia, aims to explore the relationship between sexuality education and family formation. The objective of this project is to investigate the understandings and needs in the Latvian education system regarding sexuality education for family formation (SE4FF).

The theoretical framework of the project is based on the philosophical anthropology of personalism, which sees sexuality as an integral part of human beings. The interpersonal unifying dimension of sexual relations is directly related to man’s and woman’s ability to unite biologically, psychologically, and spiritually (the three dimensions of the person) (Wojtyła, 2009). In this view, the person’s sexuality maturation is the process of integrating and harmonizing these three dimensions (Beltramo, 2018), and self-giving love (Ortega y Gasset, 2004) is the central framework for sexuality education and research. In this project the term ‘sexuality education for family formation’ is understood as young people’s preparation to live sexuality as an expression of responsible, faithful, and committed love between man and woman in their future family. SE4FF looks at

¹ <https://www.lu.lv/zinatne/projekti/atveselosanas-un-noturibas-mehanismu-projekti/atbalsts-petniekiem-projektiem/vertibas-balstibas-gimenes-pratibas-un-seksualas-izglitiba-veicinasana-latvijas-izglitiba-sistema/>

sexuality education holistically, does not reduce it to health education, and includes such values as family, freedom, respect for life, chastity, fertility, and non-violence.

The project focuses on the traditional heterosexual family model because research on this model, and support for young people to understand it, is missing in Latvia. By focusing on this model, we build upon recent research on the benefits of loving relationships between father and mother on children (Chen, Kubzansky & VanderWeele, 2019; Chen et al., 2019; Goldberg & Carlson, 2014; Parkes, Green & Mitchell, 2019). SE4FF is an inclusive approach: it does not criticise single-parent families or other family models, but rather focuses on traditional family values while upholding individual freedom and rejection of any discrimination or violence based on sexual preferences or orientation, acknowledging that, even if family structures are relevant, the most important thing in children's life is the love and care they receive at home.

One of the challenges addressed by the project is the lack of reliable scientific research about the understandings of, and needs for, value-based preparation for family formation and integral sexuality education in Latvia. Given the lack of an appropriate research tool addressing SE4FF in a culturally sensitive way (based on Latvian historical heritage and current societal needs in Latvia) and which is scientifically based on recent national and international research, a new instrument needed to be elaborated. The research questions guiding the study were:

RQ1: What are the topics to be included in a scientifically based survey questionnaire to investigate SE4FF in Latvia in a culturally sensitive way?

RQ2: Which items should be included in such a questionnaire under each topic, in order to capture its most relevant aspects?

RQ3: Which is the reliability level of the final version of the questionnaire?

Methodology

To address the research questions RQ1 and RQ2, the systematic approach usually proposed in questionnaire design research was used (Krosnick & Presser, 2010), including preliminary research, elaboration of the initial draft, piloting and finalisation.

In order to develop a tool that will be used to determine the understandings and needs in the field of sexuality education for family formation, the research team conducted extensive preliminary research, which included national and international scientific literature about SE4FF, current social and political debates in Latvia, an exploration of the current provision of sexuality education in Latvia (State created guidelines, printed and online pedagogical materials, and information materials), and also taking into account the Latvian historical heritage between the World Wars. This preliminary research helped identify challenges relevant to the Latvian educational context. Based on these steps, the research team developed a comprehensive questionnaire intended for parents of school-aged children (from preschool to Year 12), practicing educators (from preschool to Year 12, including vocational education institutions), and teacher students.

The preparation of the draft questionnaire was done in two main steps: elaboration of the initial draft (topic definition and formulation of items), and piloting and finalisation. First, based on the preliminary research and on previous experience of the core research team, the research team discussed and formulated the main topics to address in the questionnaire. Then, the initial items were formulated depending on the specificity of each topic and including a combination of open and rating questions in a 6-point Likert scale. For example, the formulation of the set of family values to rate was based on the Latvian historical legacy, the formulation of different approaches to sexuality education was based on international desk research, and the reporting and justification of good practices was left mostly to participants' open thoughts.

Once the initial draft was elaborated (which contained 7 topics and subtopics and 83 items, including 16 open questions), an initial piloting was done with 27 participants in collaboration with a survey company. Considering the time necessary for filling in the questionnaire, the questionnaire was reduced to 55 items (including 6 open questions). The final piloting with 8 participants confirmed the suitability of the questionnaire, and, after proofreading, the final version of the questionnaire in Latvian was established.

To answer the RQ3 (reliability level of the questionnaire), the Cronbach's alpha coefficient was calculated for the whole questionnaire and for each section, based on the answers collected electronically in Spring 2025 from parents, teachers and teacher students from all regions of Latvia (n=1198).

Results

In this section the results of the questionnaire design process are presented first, starting with its main sections (RQ1 – topics to address) and then the items to include under each topic (RQ2). A final section presents the results of the calculations of the questionnaire reliability (RQ3).

RQ1: Topics to be included in the questionnaire

Synthesising the results of the preliminary research, the expert discussion, and the initial and final piloting, five thematic areas were included in the questionnaire (see Appendix): (1) family values; (2) approaches to sexuality education; (3) sexuality education at school, which, given the importance and breadth of the topic, was divided in four subsections: school topics, sexual relationships at school age, school-parent cooperation and teacher training; (4) needs in the education system; and (5) two final open questions, one about examples of good practice (and their justification) and one for allowing more general comments. These topics were preceded by a preliminary section for obtaining participants' informed consent and demographic information.

RQ2: Items to be included under each topic

Family values

Seven items were included under this topic referring to the following values underlying heterosexual family formation (see Appendix, no. 1): complementarity of the two sexes (male and female), selfless love (mutual self-giving), social recognition in marriage (civil or religious), openness to life (fertility, childbearing and childrearing), stability (a permanent union for life), comprehensiveness (family as a holistic system), and exclusivity (monogamy). One open question closed this section.

The rationale for the choice of these seven items (family formation values) is based first on the Latvian historical heritage between the World Wars, in particular in the works of Students (1930) and Liepiņa (1929a, 1929b), where all those family values appear. For instance, Students emphasises that opposite-sex love is universal and deeply rooted in the human experience: “Who does not know what the love of a virgin and a young man, of a woman and a man, is like?” (Students, 1930, p. 51). He also asserts that “true and real love can only be for one person and once in a lifetime” (Students, 1930, pp. 53–54). For him indivisibility, or wholeness, is also crucial: one cannot love just a part of a person (e.g., physical beauty) without embracing the entire human being: body, mind, and soul (p. 55). Liepiņa also acknowledged the mutual complementarity of men and women, both physically and spiritually: “You could say that there are two great tendencies in people: the soulful feminine and the soulful masculine. These tendencies permeate all people, and their union creates harmony and beauty in life” (Liepiņa, 1929a, p. 325). She viewed love as a vital and fruitful force: “Love has been stamped by nature itself with the seal of immortality – for the fruit of love is life” (1929a, p. 319). She also associated love with marriage: “The purpose of eroticism ... is not only to fill the emptiness of the soul, but also to prepare for married life and the fulfilment of life’s duties” (Liepiņa, 1929b, p. 359). For Liepiņa, true sexual love involves the entire person, both spirit and body, and flourishes only within committed relationships: “One becomes a complement to the other in a biological and spiritual sense, without which every life would be only half-life” (1929b, p. 360–361). Liepiņa also believed that young people are capable of mastering their impulses: “The human being has been given the power to rule over one’s impulses; in this power humans differ from other living creatures” (1929b, p. 363).

The current Latvian legislation was also part of the rationale for the formulation of family values. The Latvian Constitution states that “The State shall protect and support marriage – the union between a man and a woman, the family, the rights of parents and children” (Section 110). The Cabinet of Ministers (2016) Regulation No. 480, referred to as the Guidelines for students’ upbringing, explicitly includes life, family and marriage among the 12 core values to be promoting in education. Another aspect considered in the formulation was the social reality of Latvia, which has one of the highest divorce rates in the European Union, and where the values of fertility and openness to life are topical, due to the demographic crisis: Since 2000, the population in Latvia has decreased by 21.65 % (Central Statistical Bureau of Latvia, 2024).

Approaches to sexuality education

An initial open question opened this section of the questionnaire, followed by seven rating-items capturing different approaches to sexuality education (see Appendix, no. 2): Risk reduction (focuses on sexually transmitted diseases (STDs) and unintended pregnancy), abstinence until marriage, comprehensive sexuality education (UNESCO, based on human rights), character-based sexuality education, education of physiology of fertility, holistic sexual education (combining education for family love and fertility), and religion-based approach.

The choice of these approaches to sexuality education was based on desk research looking for different anthropological and pedagogical approaches to sexuality education. Currently, the most dominant one is comprehensive sexuality education (UNESCO et al., 2018). Risk reduction approaches were most popular in United States two decades ago (e.g., Leslie et al., 2008). Abstinence programs, largely promoted in United States in the 1980s, may be motivated by positive outcomes on health (e.g., Trenholm et al., 2007; Cabezón et al., 2005) and religious beliefs (Regnerus, 2007; Vasilenko & Espinosa-Hernández, 2019). The physiology of fertility approach (Raith-Paula, 2018) inspires the international sexuality education program “My Fertility Matters”, by far the largest sex education program in Germany, which is being implemented in Latvia and 13 other European countries. The character-centred sexuality education (Beltramo, 2022) is an original approach based on Neo-Aristotelian and personalist virtue ethics (Akrivou & Fernández González, 2021). An example of holistic sexual education is the program Teen-STAR (Klaus, 2018; Vigil et al., 2005), currently implemented in more than 30 countries.

Sexuality education at school

This section, which was the most extensive, was divided in four subsections. The first section included six rating-items capturing possible topics to be included in SE4FF: biological and physiological processes, management of emotions and behaviour, expressing love in relationships, social norms (marriage, family formation), moral values and virtues, and religious perspectives (see Appendix, no. 3). The choice of these items was done by synthesizing the main aspects proposed by each of the different approaches to sexuality education. The starting point was UNESCO’s guidelines (2018), which include topics such as relationships, values and rights, violence, health, physiology, and sexual behaviour. These aspects were complemented with other relevant topics: for instance, the explicit mention to family and marriage is based on the already mentioned Section 110 of the Constitution of Latvia (Saeima, 1922) and on the National Development Plan of Latvia for 2021–2027 (Saeima, 2020), whose 1st priority is “Strong families, healthy and active people”, with the goal: “Healthy and active people in Latvia together build an inclusive society, with more children, happy families, responsible parents who are secure about their future”. Relevant insights from other sexuality education approaches were also included in the formulation of the items (e.g., character and virtues, religious approaches).

The subsection about sexual intercourse at school age (Appendix, no. 3.1) has two identical sets of 5 items capturing views referring, respectively, to pupils who have or have not attained the age of sixteen years, at which, according to the Criminal Law of Latvia (Saeima, 1998), they become able to give their consent for sexual intercourse. To formulate the different items, which range from most liberal views (young people can do what they want) to more conservative ones (e.g., sex at this age is morally unacceptable), views were collected from the social media and political debates, as well as from the Latvian historical heritage. For instance, Students (1930) believed that “True love is in many cases destroyed by sexual intercourse before marriage” (p. 58). Liepiņa (1929b) also believed that “a life of premature sex is undoubtedly harmful, because it consumes important forces necessary for the growth of the organism and the development of spiritual powers [...] The requirement that purity and chastity be preserved until marriage for both sexes must be maintained.” (p. 363).

As regards school-parent cooperation in sexuality education (Appendix, no. 3.2), three items were included, which captured three different models of cooperation: mutual collaboration, school only, and family only. Participants were also asked to justify their choice answering to an open question. This section was motivated by the fact that international law recognises that parents have the primary responsibility for a child's upbringing (e.g., United Nations, 1989, Article 18; United Nations, 1948, Article 26(3)). The Constitution of Latvia (Saeima, 1922) states that “Parents and guardians have the right to decide on the upbringing and education of their children” (Section 112). The modalities of cooperation between school and parents were formulated based on the proposals put forward by the different sexuality education approaches in this regard.

The subsection on teacher training (Appendix, no. 3.3) included six different statements to rate: compulsory for all teachers; required only for homeroom teachers and those addressing this topic in their lessons; inclusion in initial teacher training; availability on a voluntary basis; teacher training to be based only on UNESCO's guidelines; and training offering a range of alternative approaches, including family formation perspectives. To formulate these items, the debates originated in the parliamentary Commission of Education in Latvia regarding a recent agreement in 2024 between the Ministry of Education and Science and the University of Latvia to prepare a teacher training course based only on UNESCO et al. (2018) guidelines were considered, as well as other international approaches to teacher training in this field.

Perceived needs in the education system

This section, which has an exploratory character, included a set of 10 items capturing possible needs regarding sexuality education for family formation: three items are about sexuality education materials for families, schools and young people, four items regard education of, and support for, teachers and families, and three items regard the need to provide broader information at societal and policy making level (see Appendix, no. 4). This set of possible needs was based on needs reported in previous research (Grīnberga, 2022, 2023; Mileiko et al., 2016; Papardes zieds, 2022). An open question allowing to

mention and to rate additional needs closed this section. The rationale to stress family formation needs considered the results of a recent study implemented by the research team of this project, revealing that there are almost no appropriate materials or courses in Latvia for sexuality education based on family formation values. From January to April 2025, the 72 newest / most relevant sexuality education materials in Latvia were analysed (19 videos, 48 texts, and 5 mixed-type materials elaborated by state institutions, NGOs and educational portals), and 53% of them failed to meet minimum requirements for promoting SE4FF, reducing sexual education to health education, and avoiding contents about committed love, fidelity, fertility, self-control, and respect for unborn life. As the current dominant approach in sexuality education policy and practice in Latvia purports mostly a liberal worldview, the hypothesis emerged that there is a need to diversify the sexuality educational offer with materials promoting SE4FF in order to reinforce democratic values, so that parents and teachers can choose from different worldviews.

Good practices

The last section of the questionnaire had two goals: collecting best practices in the field and understanding participants' rationale for considering a concrete practice as a good practice. One open question addressed these questions and a final open question allowed for more general comments about the questionnaire.

RQ3: Reliability of the questionnaire

To determine the reliability of the questionnaire, the Cronbach's alpha coefficient was calculated for the whole questionnaire and for each section separately. The overall reliability of the questionnaire is high ($\alpha = .865$, 46 items). Three sections have an acceptable/moderate internal consistency, namely, Section 2 exploring participants' opinions about approaches to sexuality education ($\alpha = .602$, 7 items), Section 3.2. about sexual relations at school age ($\alpha = .598$, 10 items), and Section 3.4. about teacher education for sexuality education ($\alpha = .585$, 6 items). Section 3.1. on sexuality education topics has a high internal consistency ($\alpha = .788$, 6 items), and both Section 1 on family formation values and Section 4 on sexuality education needs have a very high internal consistency ($\alpha = .877$, 7 items and $\alpha = .956$, 10 items, respectively).

Discussion

This discussion addresses the question of the validity of the new instrument. Validity assessment evaluates the degree to which a questionnaire is able to measure what it is supposed to measure (Bujang et al., 2022). Different kinds of questionnaire validity can be discussed: face validity (estimated by users), content validity (estimated by experts), construct validity (coherence with the research paradigm) and contrast validity (compared with similar questionnaires).

Face validity "is carried out by those who will use the instrument or who will make decisions based on the results" (Gento, 2012, p. 103). The process of questionnaire

elaboration described in the methodology ensured a continuous check of the face validity of the questionnaire: two senior researchers and three students participated in the discussion of the initial draft and of the modifications resulting from the piloting to ensure the questionnaire will be aligned with the purpose of the research and will help collect the necessary information for the research project.

Content validity “explores whether the instrument covers all aspects that should be analysed in relation to the topic being studied or analysed” (Fox, 1981, p. 421) and it is implemented by experts (Bujang et al., 2022, p. 44) based on predetermined criteria, e.g., it includes the fundamental aspects of the topic, is based on the scientific bibliography, corresponds to the expert experience, and for each aspect the formulation and number of questions (items) is appropriate and coherent with the relevance of the aspect (Gento, 2012, p. 106). The content validity of the questionnaire was ensured by an additional senior researcher and two senior experts, who discussed the final draft of the questionnaire and decided the number of items per topic and which items should be retained and which ones were expendable. The formulation of the items was based on the findings of the preliminary research, as explained in the Results section.

Construct validity assesses how well the questionnaire fits with the conceptual paradigm (including philosophical and anthropological foundations) and with the implementation perspective (Gento, 2012, p. 107). The questionnaire’s construct validity is patent in the initial set of family values (Appendix, no. 1), which is based on the understanding of sexuality of personalist philosophy (theoretical framework of the project). The final choice of the topics and items, in particular regarding the sexuality education topics (Appendix, no. 3) and needs (no. 4) also was guided by the framework of sexuality education for family formation presented in the introduction.

Contrast (or concurrent) validity “compares the instrument with other instruments with similar characteristics” (Gento, 2012, p. 108). Recent studies in Latvia confirm the topicality of the questionnaire and its specificity. For instance, a study on teachers’ views about virtue education (Mileiko et al., 2016) pointed to an increasing interest on young people’s sexuality education and the role of school and parents in this regard. More recently, a parent survey (Papardes zieds, 2022) addressed also the role of the school in sexuality education and perceived needs regarding informative materials, NGO involvement and national education policies. Another recent study (Grīnberga, 2022) addressed young people’s expectations on future family life and their arguments against starting a family, as well as the role of family and school in sexuality education. And a teacher survey (Grīnberga, 2023) also inquired about the ideal approach to sexuality education of young people, the role of the education system, the accessibility and quality of learning materials in this field and the necessary support for teachers. A recent study among Latvian residents aged 15–64 (Ķīvīte-Urtāne et al., 2023) stressed sexual and reproductive health issues and found that the sexuality education provided by schools is insufficient and is seldom presented as a positive human potential. Finally, the Latvian data of the international study Health behaviour in school-aged children (HBSC) for 2022–2023 (Pudule et al., 2024) contains only 1.5 pages about sexual behaviour of adolescents aged

15. The comparison of the instruments used in these studies with the new questionnaire makes apparent both the topicality of its sections and items and the specificity of the family formation perspective, which is almost absent in other questionnaires.

Conclusions

This research responds to the need for a scientifically based instrument for researching the understandings of sexuality education for family formation in the Latvian context. The study allowed to determine which topics should be included in a questionnaire which addresses SE4FF in a culturally sensitive way (based on Latvian historical heritage and current societal needs in Latvia) and which is scientifically based on recent national and international research (RQ1). These topics were family values, sexuality education approaches, topics to address at school, sexual relationships at school age, school-parent cooperation, teacher training for sexuality education, perceived needs, and good practices). The study also determined which items should be included under each topic (RQ2) and concluded that the final questionnaire has a good level of reliability, both at section level and as a whole (RQ3).

The discussion highlighted that the questionnaire's face validity, content validity, construct validity and contrast validity are appropriate. The findings of this study affirm the potential of the developed questionnaire as a valuable tool for future educational research in the domain of sexuality education for family formation. The instrument provides a robust foundation for conducting needs assessments within Latvia's educational context, with potential research-based applications for development of sexuality education curriculum in schools, teacher preparation, and development of school-family partnerships. Research implemented with this tool will help to create educational materials that balance factual information with value-based guidance preparing young people for informed decision-making about relationships and family formation. It can be expected that the implementation of research-based programs of SE4FF will impact positively not just on individual health, but also on broader societal health, family formation, and demographic sustainability indicators in society. It would also support the creation of teacher training programs that are not only scientifically grounded but also aligned with national values. This groundbreaking approach represents a meaningful contribution to addressing both immediate educational needs and longer-term national development priorities.

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Appendix: Questionnaire structure

VIRTUOUS SEXUALITY EDUCATION BASED ON FAMILY VALUES: UNDERSTANDING AND NEEDS

Informed consent section.

Demographics (status: parent/teacher/future teacher; age group; location: region; kind of city – capital/big city/small city/countryside).

1. Virtuous sexuality education based on family formation values

How important would it be to include the following principles and values in sexuality education of young people? (Seven statements to rate in a 6-point Likert scale from ‘Not important at all’ to ‘Very important’. Not randomised rows).

1. A family begins with the union between a woman and a man. It is based on the recognition of the differences and complementarity of the two sexes (male and female).
2. Selfless love. When building a family, a couple makes a free decision to selflessly and mutually give of themselves for the good of the other with joy.
3. Social recognition in marriage. The union of a man and a woman is socially recognised in a civil or religious marriage.
4. Openness to life. Fertility, childbearing and childrearing are important foundations of building a new family.
5. Stability. The new family is planned as a permanent union for life, not just for a while.
6. Holistic system. This union is understood as comprehensive, holistic, and the family as a system in which everything else (work, leisure, social life, etc.) is subordinated to the good of the union, the family members.
7. Exclusivity. Monogamy, unity. There is no room for intimate relationships outside this union.

Please list the values and attitudes (no more than five) that you think would characterise a happy, functional family! [Free space for reply].

2. Approaches to sexuality education

How would you define the phrase “virtuous sexuality education”? What do you associate it with? [Free space for reply].

How do you assess the suitability of the following approaches to sexuality education in schools? (Seven statements to rate in a 6-point Likert scale from ‘Not suitable at all’ to ‘Very suitable’. Includes additional option ‘No opinion’. Randomised rows).

STD risk reduction approach: focuses only on reducing the risk of sexually transmitted diseases (STDs) and unintended pregnancy by promoting the use of condoms and other contraceptives.

1. Abstinence approach: emphasises postponing sexual relations until marriage without teaching contraception in detail.

2. The comprehensive (human rights-based) approach (UNESCO): based on gender equality, emphasises contraception over the virtues of character and family building.
3. Virtue-based approach: focuses on developing virtues to build stable relationships, emphasising self-control to reduce physical and mental health risks, rather than promoting condoms.
4. Fertility physiology approach: educates boys and girls separately before puberty about the physiology and creation of new life, emphasising parental involvement and preparedness for future parenthood.
5. Holistic (love and fertility) approach: emphasises the interplay of biological, emotional, social and spiritual aspects, promotes understanding of fertility, love relationships and informed decision-making.
6. Religion-based approach: integrates religious teachings, moral values and spirituality to guide understanding of sexuality issues.

3. Sexuality education and school

3.1. Please rate the importance of including the following topics in sexuality education.

(Six topics to rate in a 6-point Likert scale from 'Not important at all' to 'Very important'. Not randomised rows).

1. Biological and physiological processes
2. Sexuality and the management of related emotions and behaviour
3. Ways of expressing love and relationship culture
4. Social norms (meaning of marriage, family formation)
5. Moral values and how they are implemented in everyday choices (virtues)
6. Religious and spiritual perspective

3.2. Sexual relationships at school age.

To what extent do you agree with the following statements on the initiation of sexual relations at school age (minors with each other)? In the answers, we distinguish between pupils aged 16 and over, who are of the age of giving consent, according to the legislation of the Republic of Latvia, and younger (aged 12–15). (Five statements for each age group to rate in a 6-point Likert scale from 'Strongly disagree' to 'Strongly agree'. Includes additional option 'No opinion'. Not randomised rows).

It's a personal choice for young people to do what they want.

1. This is acceptable if young people are emotionally and psychologically mature.
2. This is acceptable as long as young people have a sufficient understanding of safety and responsibility.
3. This is a premature, ill-considered decision and may have negative consequences.
4. Sex at this age is morally unacceptable and should be avoided by young people.

3.3. School-parent cooperation in the field of sexuality education

Choose one of the statements with which you most agree!

1. The school should try to involve parents in their children's sexuality education (e.g. through joint homework or conversations)

2. Parents should not be involved in sexuality education at school
3. Sexuality education should only be done at home, in line with family values.

Please justify or clarify your choice! (Mandatory) [Free space for reply].

3.4. On teacher training

To what extent do you agree with the following statements on teacher education in the area of sexuality education? (Six statements to rate in a 6-point Likert scale from ‘Strongly disagree’ to ‘Strongly agree’. Includes additional option ‘No opinion’. Randomised rows).

All teachers should attend continuous professional development courses on sexuality education so that they can answer young people’s questions about sex life as soon as they arise.

1. Sexuality education is only required for homeroom teachers and for teachers who teach lessons related to the topic.
2. Sexuality education must be included in teacher training programmes.
3. All teachers should have the opportunity to voluntarily improve their knowledge of sexuality education through regular in-service training.
4. Only UNESCO’s approach to comprehensive sexuality education should be offered in teacher education.
5. Teacher education should offer a range of alternative approaches to sexuality education, including an approach based on Family formation values and virtues.

4. Needs in the education system

In order to fully implement in the Latvian education system a sexuality education approach that incorporates family formation values (love, complementarity of both sexes, openness to life, etc.) and promotes the development of virtues to put these values into practice, how important do you consider the following activities and needs? (10 needs to rate in a 6-point Likert scale from ‘Not important at all’ to ‘Very important’. Not randomised rows)

1. Offering sexuality education to young people in educational institutions that uses this approach
2. Developing educational materials on the use of this approach in the family
3. Developing teaching materials to use this approach in the classroom
4. Developing information material on the approach for young people to learn independently
5. Including this approach in initial teacher training
6. Offering teachers continuous professional development courses that use this approach
7. Organising courses for parents on this approach
8. Ensuring that schools and families have access to professional counsellors who use this approach
9. Informing the education policy makers and actors about the scientific basis of this approach

10. Promoting knowledge about this approach and its benefits to society
Are there any other activities or needs you would like to mention? [Free space for reply] (Optional)

5. Examples of good practice and recommendations

If you would like, please share an example of good practice in the field of sexuality education! Why do you think it is good practice? [Free space for reply] (Optional)

6. Final questions

Do you have any other comments on the topic of this survey – virtuous sexuality education based on family formation values in the Latvian context (e.g. key messages or aspects that children and young people should learn in sexuality education, preferred approaches, priority needs, recommendations for teacher and parent education, etc.)? [Free space for reply] (Optional)