

THE CASE OF REDESIGNING THE CURRICULA OF PRESCHOOL EDUCATION STUDY PROGRAMME

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ABSTRACT

According to society 5.0. and the *Six pillars of the Recovery and Resilience Facility* EU plan, Slovenia developed National Strategy for Higher Education to 2030, that encourage the digital transition of higher education institutions (HEI). Therefore, from the basic definition of digital competences, we define digital competencies of teachers of HEIs as the ability to use digital tools purposefully in the learning process in order to (1) provide a quality learning experience, (2) empower the use of digital technologies in teaching and learning and thus foster the development of digital competencies of students and (3) create opportunities for their use in authentic learning situations (Redecker & Punie, 2017). Based on DigCompEdu model – educators present a role models for the use of digital technologies, encouraging safe and critical use of digital technologies by their students (Redecker & Punie, 2017). Starting from the assumption that the quality of teaching requires appropriate structural, and procedural conditions (Elassy, 2015; Moss, 2016), we evaluated the current curriculum and reflect on the meaningful use of digital tools for planning, learning and teaching. On this bases we developed a model for curriculum redesign with the integration of digital technology. The model includes (i) a systematic analysis of the digital competences of higher education teachers and students; (ii) implementation of targeted training in the use of digital tools within the framework of field specific instructional design; (iii) the implementation, retuning and evaluation of the redesigned curricula of the Preschool Education study programme.

Keywords: *preschool education, students, university teachers, digital competencies, curricula redesign.*

Introduction

National Strategy for Higher Education to 2030 and the project Reforming Higher Education for a Green and Resilient Transition to Society 5.0. digital transition, based on the Recovery and Resilience Plan adopted by all EU Member States, gives special attention to the digital transition and thus to digital competences (DC). Digital competences (DC) are defined as the ability to use digital tools in different ways in different environments and domains (López-Belmonte et al., 2019). The European Digital Competences Framework for Educators – DigCompEdu – is based on the premise that educators are

role models of digital technology use who promote the safe and critical use of digital technologies by their learners (Redecker & Punie, 2017). Thus, from the basic definition of digital competences (DC), we can derive a definition of DC for HEIs and outline it as the ability to use digital tools purposefully in the learning process in order to (1) provide a quality learning experience, (2) empower the use of digital technologies and thus foster the development of digital competences of students, and (3) create opportunities for their use and concrete learning situations (Redecker & Punie, 2017). The DC that a HE teacher should have to promote the development and learning of students, future preschool teachers, is summarised in the European Digital Competences Framework – DigCompEdu which includes three key areas (1) teachers’ professional competences, (2) pedagogical competences and (3) the ability to promote students’ digital competences. All three levels work in an integrated way, with the teacher’s ability to engage professionally in digital environments as a starting point for developing the ability to learn about and use digital tools, the ability to teach, monitor and assess, and to encourage the student to use digital tools appropriately. Professional competence, knowledge and ability to use digital tools is thus also a starting point for the development of the ability to promote the student’s digital competence (Redecker & Punie, 2017).

In addition to defining the DC of HE teachers, it is also necessary to identify ways of fostering their development in students. T. Štemberger and S. Čotar Konrad (2021) note that students, future teachers, have positive attitudes towards the use of digital tools in education, although they have low ratings of their DC, especially those with didactic value. Students, future teachers, are proficient users of digital tools in the field of social media, but not of other digital tools that would provide them with a rich learning experience (McGarr and McDonagh, 2021). Other research (e.g. Fernández-Batanero et al., 2021) also shows a low level of DC among higher education teachers and highlight the need for additional training of HE teachers in the field of developing meaningful use of their DC. As previous studies revealed, although the impact of the digital revolution on education is inevitable, the development of the use of digital tools for learning and teaching purposes depends on the knowledge and skills of HE teachers and their attitudes towards the digitisation of higher education (Núñez-Canal et al., 2022).

Fernandez Marquez et al. (2018) note that HE teachers often develop basic digital competences as self-learners or in the context of courses organised at the HEI. However, their awareness that they themselves can foster the development of DC in students is low. On the other hand, it is true that HE teachers who rate their own DC highly recognise its importance in the delivery of the learning process, and as a consequence, the level of students’ DC increases (Núñez -Canal et al., 2022). Higher education teachers should therefore first be trained in understanding the different approaches to learning and teaching using digital tools (blended learning, MOOCs, web- or computer-based learning, hybrid teaching model – (a)synchronous teaching) (Núñez-Canal, de Obesso & Pérez-Rivero, 2022), in order to develop DC in a meaningful way in the following areas: (1) digital literacy, (2) data security, (3) problem solving with digital tools, (4) attitudes towards the meaningful use of digital media, (5) assessment and immediate feedback with digital tools, (6) ways

of using digital tools in the context of the learning and teaching process (Núñez-Canal, de Obesso & Pérez-Rivero, 2022). Softič, (2018) notes that HE teachers use digital tools mainly to provide students with materials (use of e-classroom), to provide information on course delivery in order to ensure better communication with students, and to a lesser extent to provide feedback (evaluative aspect of HE teachers' digital competences).

Indeed, the implementation of different models of learning and teaching using digital tools during the Covid-19 pandemic has shown the necessity of providing structural conditions (digital tools provided) and qualified HE teachers that could further promote the DC of students (Núñez-Canal et al., 2022). But in order to provide teaching and learning models in HEI based on digital tools, it is therefore also necessary to provide *structural conditions* such as a digital screen, microphone, loudspeaker, computers, licences (Núñez-Canal, de Obesso & Pérez-Rivero, 2022). In addition, reasons for not using digital tools include *organisational and motivational aspects* (e.g. lack of time to develop content, lack of recognition of effort by management in evaluating staff who already use digital tools) and *content aspects* (lack of relevance of using digital tools in the context of a specific course, views on the actual contribution of using digital tools to the creation of a quality learning process) (Núñez-Canal et al., 2022). Nevertheless, an appropriately structured and stimulating learning environment, provided by the HEI and the HE teacher, within the framework of structural and procedural conditions, is the central context and space of education. It contains the anthropological-cultural as well as the specific institutional characteristics of a given environment, which are intentionally organised (starting from knowledge of the characteristics of the quality of the learning environment) and often intuitively provided (Rutar et al., 2022). A supportive learning environment is therefore characterised by appropriate material conditions and social interactions. At the same time, the innovative learning environment that we aim to provide in order to respond successfully to students' learning needs also goes beyond convergent ways of planning, delivering and evaluating the pedagogical process (Rutar et al., 2022).

On the basis of the presented starting points, we planned the development of digital competences of higher education teachers, with the ultimate goal of renewing the curricula of the Preschool Education study programme and, consequently, the development of digital competences of students. We assume that acquired skills will enable HE teachers to make appropriate use of digital tools to communicate with colleagues, students and others with whom they interact by developing effective ways of communication with existing digital tools (e.g. Moodle, Microsoft 365 application). Even more, acquired knowledge and skills will enable HEIs to provide a pedagogical process, with the aim of empowering future preschool teachers to use digital technologies and thus to be digitally competent. And finally, acquired knowledge and skills will provide opportunities for building students' digital competencies, namely (i) professional collaboration, networking (use of digital tools to promote collaborative learning and communication), (ii) knowledge of digital tools and assessment of their relevance; (i) use of digital tools in planning, implementation, evaluation (e.g. preparing e-portfolio) and (iv) individualised support to preschool children's learning and development (e.g. planning a learning process with Beebot).

Consequently, the purposes of the study were:

- to analyse the state of the existing DC according to DigCompEdu model in the current curricula of study programme of Preschool education;
- identification of needs of HE teachers for the development of DCs in order to integrate DC into the curriculum of Preschool education study programme;
- develop a model for redesigning the curricula of study programme of Preschool education.

Metodology

Participants were 25 HE teachers, members of Department of Preschool Education, Faculty of Education, University of Primorska: 13 were female and 2 male. The average age of the participants was 46 years.

Data was gathered at University of Primorska, Faculty of Education, Department of Preschool Education in February 2023 within the project Green Digital Inclusive University of Primorska sub-activity Green and Digital Transition Competences in the study programme Early Childhood Education. Data was gathered according to all requested ethical standards, including informed consent, privacy and confidentiality and data minimization. Participants could withdraw from the study at any time.

Firstly, HE teachers completed a SELFIE for Teachers self-evaluation tool (European Commission, 2023), which aimed at identifying their strengths and weaknesses in the area of DC. Secondly, after getting familiar with DigCompEdu model, HE teachers participated in focus groups led by Head of Department discussing about (i) their views of the digitalization of Preschool education study programme, (ii) identification of needs in the field of development of their DCs in different DigCompEdu areas. Finally, HE teachers completed a matrix on the presence of specific DC in each syllabus of compulsory and elective courses of Preschool Education study programme.

Results and discussion

Based on the result of the SELFIE for Teachers self-evaluation tool (European Commission, 2023) HE teachers self-reported their proficiency in DC; most of them self-assessed the level of competencies as an explorer (8), followed by newcomer (2), integrator (2), expert (2) and pioneer (1).

The first aim of the present study was to analyse the presence of DCs in the existing curricula of the Preschool education study programme. The analysis was carried out according to DigCompEdu, which foresees six main areas of DCs for teachers.

The results show (see Table 1) that the DC domain in the area of Professional Engagement can be found 42 listed competencies in syllabuses in the current Preschool education curricula, in the area of Digital Resources 24 listed competencies; in the area of Teaching and Learning 34 listed competencies; in the area of Assessment 5 listed competencies; in the area of Empowering learners 37 listed competencies; and in the area

of Promoting learners' digital competences there were 20 listed digital competencies in the current syllabuses of the Preschool Education study programme. An analysis of the existing curricula shows that the current curriculum contains particular DCs that HE teachers have located in specific areas of the DigCompEdu model. However, a more detailed analysis shows that HE teachers identify DCs to the greatest extent in the area of Professional Engagement of students, future preschool teachers, and to the least extent in the area of the use of digital technology for assessment or feedback to students.

Table 1 Overview of the current integration of digital technology in the syllabus of subjects/year

Digital competences of teachers/ students	Compulsory courses			Elective courses (22 courses)	
	1st year (12 courses)	2nd year (12 courses)	3rd year (8 courses)		
Professional Engagement	To use digital technologies to enhance organisational communication with learners, parents and third parties. To contribute to collaboratively developing and improving organisational communication strategies.	5	2	3	4
	To use digital technologies to engage in collaboration with other educators, sharing and exchanging knowledge and experience, and collaboratively innovating pedagogic practices.	2	0	1	1
	To individually and collectively reflect on, critically assess and actively develop one's own digital pedagogical practice and that of one's educational community	1	1	2	1
	To use digital sources and resources for continuous professional development.	6	5	4	4
Digital Resources	To identify, assess and select digital resources for teaching and learning. To consider the specific learning objective, context, pedagogical approach, and learner group, when selecting digital resources and planning their use.	4	2	5	6
	To modify and build on existing openly-licensed resources and other resources where this is permitted. To create or co-create new digital educational resources. To consider the specific learning objective, context, pedagogical approach, and learner group, when designing digital resources and planning their use.	1	0	1	1
	To organise digital content and make it available to learners, parents and other educators. To effectively protect sensitive digital content. To respect and correctly apply privacy and copyright rules. To understand the use and creation of open licenses and open educational resources, including their proper attribution.	0	0	2	2

Digital competences of teachers/ students	Compulsory courses			Elective courses (22 courses)	
	1st year (12 courses)	2nd year (12 courses)	3rd year (8 courses)		
Teaching and Learning	To plan for and implement digital devices and resources in the teaching process, so as to enhance the effectiveness of teaching interventions. To appropriately manage and orchestrate digital teaching interventions. To experiment with and develop new formats and pedagogical methods for instruction.	3	4	5	6
	To use digital technologies and services to enhance the interaction with learners, individually and collectively, within and outside the learning session. To use digital technologies to offer timely and targeted guidance and assistance. To experiment with and develop new forms and formats for offering guidance and support.	1	1	0	1
	To use digital technologies to foster and enhance learner collaboration. To enable learners to use digital technologies as part of collaborative assignments, as a means of enhancing communication, collaboration and collaborative knowledge creation	2	1	4	0
	To use digital technologies to support learners' self-regulated learning, i.e. to enable learners to plan, monitor and reflect on their own learning, provide evidence of progress, share insights and come up with creative solutions	2	1	3	0
	To use digital technologies for formative and summative assessment. To enhance the diversity and suitability of assessment formats and approaches.	1	0	2	0
Assessment	To generate, select, critically analyse and interpret digital evidence on learner activity, performance and progress, in order to inform teaching and learning.	1	0	1	0
	To use digital technologies to provide targeted and timely feedback to learners. To adapt teaching strategies and to provide targeted support, based on the evidence generated by the digital technologies used. To enable learners and parents to understand the evidence provided by digital technologies and use it for decision-making.	0	2	4	2
Empowering Learners	To use digital technologies to address learners' diverse learning needs, by allowing learners to advance at different levels and speeds, and to follow individual learning pathways and objectives.	2	1	0	0

Digital competences of teachers/ students	Compulsory courses			Elective courses (22 courses)	
	1st year (12 courses)	2nd year (12 courses)	3rd year (8 courses)		
Empowering Learners	To use digital technologies to foster learners' active and creative engagement with a subject matter.	2	2	2	2
	To use digital technologies within pedagogic strategies that foster learners' transversal skills, deep thinking and creative expression.	1	2	4	2
	To open up learning to new, real-world contexts, which involve learners themselves in hands-on activities, scientific investigation or complex problem solving, or in other ways increase learners' active involvement in complex subject matters.	1	2	4	2
Facilitating Learners' Digital Competence	To incorporate learning activities, assignments and assessments which require learners to effectively and responsibly use digital technologies for communication, collaboration and civic participation	1	1	3	2
	To incorporate learning activities, assignments and assessments which require learners to express themselves through digital means, and to modify and create digital content in different formats.	0	1	3	1
	To teach learners how copyright and licenses apply to digital content, how to reference sources and attribute licenses.	1	0	1	1
	To take measures to ensure learners' physical, psychological and social wellbeing while using digital technologies.	2	0	1	0
	To empower learners to manage risks and use digital technologies safely and responsibly.	2	0	0	0

According to our second aim of the study, we examined the HE teachers' needs for the development of DCs in order to integrate DC into the curriculum of Preschool education study programme. Based on focus groups, HE teachers' reported needs in five areas of developing DCs (see Table 2). The results show (see Table 2) that the areas of use of digital technology identified by HE teachers partly overlap with areas already identified as important in the DigCompEdu model, and partly indicate the identification of new areas of use of digital technology in the work of HE teachers (e. g. research). We conclude (see Table 2) that HE teachers expressed need for training in the development of DCs in the field of learning and teaching, their own professional development, with a particular outline in the field of digital resources. In the latter they express the need for training in the field of data protection and copyrights, getting acquainted with concept and use of (common) licences, OER etc. An additional area that particularly reflects the specificity of the work of HE teachers, and represents a moment in which the DigCompEdu model

Table 2 Overview of identified HE teachers' needs in the area of digital competences.

Digital competence	Content
Research	Continuous technical support for the use of digital tools to ensure research based on the usage of the using up-to-date software for qualitative and quantitative research.
Didactic	Responsiveness in providing continuous technical but mostly didactical support to higher education teachers with the aim to implement appropriate digital approaches in the study process.
Professional development	Continuous training on the use of digital tools that are already available to HE teachers and staff (Moodle and 356 Microsoft) in order to make meaningful use of the available tools. Provision of training in the use of new digital tools to ensure continued professional development.
Digital resources	Empowerment of HE teachers in the field of data protection and copyrights, common licences, OERs etc.

is not sufficient for the HE teachers, is the area of research. HE teachers also expressed the need for training in the use of DC to conduct research, which goes beyond the purpose and objectives of the current research, which focuses mainly on the integration of DC in the redesign of the Preschool education curriculum.

In the context of our third aim to develop a model for redesigning the curriculum of study programme of Preschool education, we integrated the data and the theoretical and empirical background to develop a model for redesigning the curriculum of Preschool education study programme (see Figure 1). As we have already presented in the theoretical part of the paper, the model of Preschool Education study programme curricula redesign is based on wider conception and European digital competence framework – DigCompEdu. Based on this we have designed seven Phases of project, which run from analysis of the existing situation (phase 1) till final redesigning of Preschool Education study programme (phase 7).

First three phases (see Figure 1) – (1) *Research review, analysis of attitudes, knowledge and skill and identification of the needs of teachers and students*; (2) *setting objectives and planning the development of DCs according to the identified needs of teachers and students*; and (3) *training on developing DCs for HE teachers and students* – have resulted in the development of new syllabus proposals from HE teachers included in research. Currently, we are entering the pilot implementation phase (phase 4, see Figure 1) of the redesigned curriculum with the aim of testing, evaluating and fine tuning of syllabus based on feedback from students and HE teachers (phase 5, see Figure 1). On the basis of the acquired knowledge and skills, HE teachers will design and implement pedagogical approaches and pedagogical processes in a way and with the aim of empowering students, future preschool teachers, to use digital technologies and thus become digitally competent preschool teachers. On this basis, the HE teachers of Preschool education department will develop a curriculum of new study programme that will be able to respond to the challenges of digitalisation, and will empower students, future preschool teachers, for the meaningful use of digital technology in preschool education in our country (phase 7).

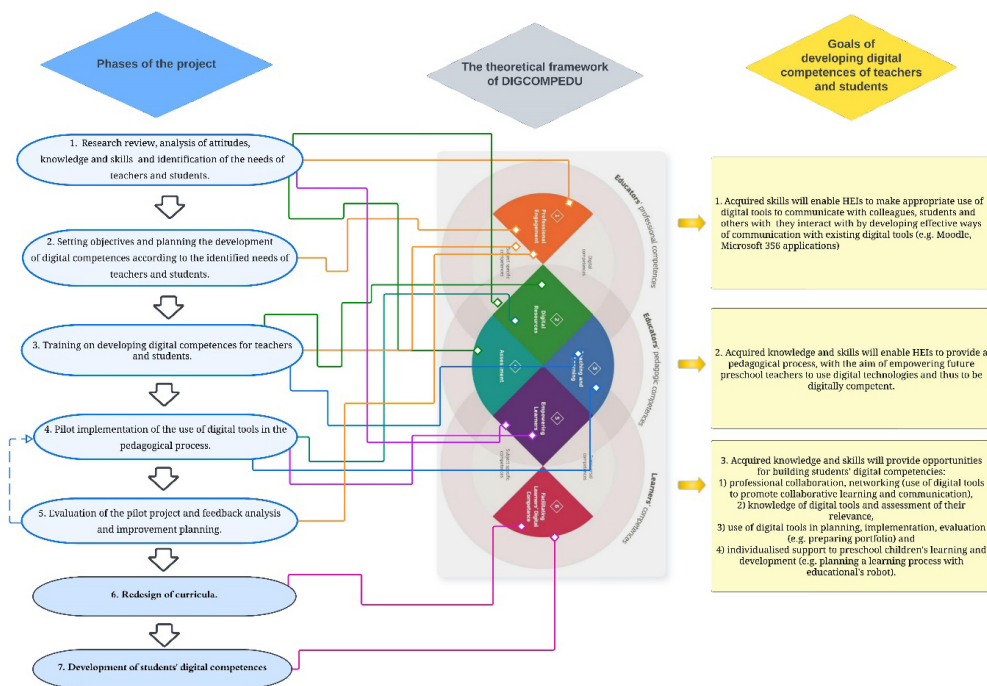


Figure 1 Planned phases of the Digital Transition Competences project activities in the Preschool Education study program

Finally, the renovation of the curriculum should be focused towards (1) the development of students' digital competencies by digitalising the study process and changing pedagogical approaches and consequently towards (2) the development of digital competencies in preschool children. By developing DC of students, future preschool teachers' we can ensure the accessibility of digital technology and its meaningful use to all children (not just to some or most of them). Therefore, the concept of digital equity should be emphasised and recognised as important in achieving inclusive education. Digital equity means enhancing equal opportunity for students at risk by ensuring accessibility of the content and the opportunity to perform tasks. It also assumes that teachers are able to facilitate the participation of all students regardless of their abilities and enable them to realise their potential by meaningfully using digital technology in the learning process (Resta et al., 2018). According to this, digital equity should be considered also in the context of the ECEC, as the letter offers the crucial opportunity for learning and development.

Conclusion

The key finding of this research highlights the importance of introducing digital technology in the curriculum of the study programme of Preschool Education that foresees a meaningful change in pedagogical approaches. Whereas, making changes just by adding new content but not also new approaches that meaningfully encompass digital technology can be superficial. The reform of the curriculum should there address three main areas. Firstly, permanent access to hardware, software, and connectivity to the Internet, so all students can equally participate in the learning process. Secondly, it is important to foster the development of digital competencies of HE teachers as they represent a model to their students. Although, they may have positive attitudes towards technology but not also corresponding skills and knowledge as they are often self-taught. Thirdly, it is necessary to adapt or revolutionise pedagogical approaches to new digital reality in a way that digital technologies make sense for all – students and teachers and therefore avoid the gap between traditional pedagogical approaches and digital technology. Finally, the digitalisation of education should consider and address the inequality in education by enhancing equal opportunity for all children when it comes to digital technology.

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