



DigiChild



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DEVELOPMENT OF DIGITAL COMPETENCE IN PRESCHOOL EDUCATION

B A C O U R S E S Y L L A B U S



DEVELOPED BY
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DigiChild project general description

The syllabus was done under the umbrella of the Erasmus+ DigiChild Strategic Partnership project (Developing Teachers' Skills to Educate Pre-School Children with and Through Digital Technologies / 2020-1-EE01-KA226-HE-093388, 1.03.2021-28.02.2023).

Project partners:

University of Tartu, Estonia (Coordinator)

Heidelberg University of Education, Germany

University of Primorska, Slovenia

University of Latvia, Latvia

Rakvere Rohuaia Kindergarten, Estonia

Vrtec Koper, Slovenia

CreaKids Kindergarten, Latvia

Justification of reason for the development of the course Development of Digital Competences in Pre-School Education

Digital tools are often used in educational establishments of different levels including kindergartens. Though they are used for different purposes, they are mostly used for displaying the picture/image/cartoon to the kids. In this kind of situation, even in the case of using the technologies for learning and not entertainment, the children take a passive position and perceive the information that does not develop curiosity, creativity, independence, and critical thinking in them. The project aimed to develop a university course to teach future kindergarten teachers how to use digital technologies and turn their students from passive perceivers of the information into active learners striving for knowledge.

The first initiatives to teach kindergarten children both with and through technology appeared less than a decade ago in a small number of kindergartens in a small number of countries. Globally speaking, we can say that the development of digital skills in pre-schoolers is virtually non-existent and remains a totally foreign practice for the dominant majority of the world.

The DigiChild project accumulated international practical and theoretical experience in the area of teaching kindergarten children how to use technology for learning purposes. Extensive sharing of know-how in the field allowed building a sound basis for the future intellectual outputs and multiplier events. The involvement of survey and data analysis specialists contributed to the development of a high-quality survey that consequently brought a good boost for the course content development. The survey results also helped identify the areas of concern or even fear and raise the general public awareness in terms of the necessity of digital education for the youngest learners. The cooperation between the universities and kindergartens from different countries allowed bringing in their advanced expertise into syllabus development and added quality to the future BA course. The university partners closely cooperated with the kindergarten partners and received immediate feedback in terms of how applicable the newly developed approaches are. All these elements gave grounds for a successful achievement of the course *Development of Digital Competence in Preschool Education*.

The cooperation between the universities and kindergartens of 4 countries led to the development of the innovative course, which was launched at 4 partner universities.

Qualitative indicators: the course was successfully piloted by partner universities, during the piloting stage the shortcomings were identified and eliminated

Quantitative indicator: 399 students took the course during the project lifetime at 4 partner universities.

The course development base on the following grounds:

1) experience and know-how sharing. The project included 4 LTTs in 4 project countries for all the partners. This allowed sharing the available experience and starting on a sound basis. The partners organized the LTTs in their countries so that the maximum progress in the digitalization of education in general and pre-school education in particular could be shared.

2) the survey of different target groups identified the areas of potential quick progress and concerns. The target groups included preschool teachers and administrators, psychologists, parents of young learners. This survey allowed us to identify different points of view - what preschool teachers can potentially teach, what primary school teachers expect their first graders to know already or would appreciate if they knew, how the administration in schools and kindergartens can support the progress, the parental attitudes and openness to early digitalization of education, as well as the dominant social fear, mal- and misperception, or even ignorance of educational technologies. This survey allowed us to find the best ways for the smart introduction of technology and further raise awareness of the public in this area.

3) cooperative discussion of the course content and the syllabus design. It rested upon the previous stages of this Intellectual Output (LTTs and survey) as well as the strategies and documents from the Ministries of Education of the partner countries that identify the use of technology in the educational establishments of different levels.

4) the cooperative development of the course materials to be used in work with the students. The materials were tested during the course design and piloting stages to eliminate all the possible drawbacks. Students gave feedback on the materials used. The materials to be used with the children in kindergartens were tested by their teachers who are also partners in this project. Kindergarten teachers gave feedback on the materials and the children's involvement in the designed activities.

5) approving the course at the university level and introducing it as a new course in the programme for preschool teachers.

6) piloting the course at all the partner universities, meeting face-to-face and online to eliminate drawbacks.

7) preparing reports on BA course development.

The University of Primorska was the lead partner of this intellectual output. The university partners were more involved in the development of the course than kindergartens.

1) Know-how sharing:

We shared the best practices of developing digital competence of pre-school children available in their countries. We contacted the Ministry of Education and had sessions with them. We also had field observations, borrow new methods from foreign partners, and adopted in our kindergartens.

2) Survey:

Partners jointly developed the questionnaire. University partners contributed more as they know more about the survey development principles. All partners disseminated the questionnaire as wide as possible in their countries.

University of Tartu was responsible for the survey statistics, data preparation, and analysis as the team from this university has a member who specializes in survey developments, data analysis, programmes like SPSS and Excel that are used in statistical studies.

3) Course design:

University partners were more involved in this part of the course as the course was designed for the BA students. Kindergartens contributed with their expertise. We also borrowed some ideas from the survey into the BA course. We also invited some survey participants (who contacted us through email in the survey introductory part) to share their teaching approaches during the international dissemination events.

4) Development of materials:

Universities developed the materials for the course. They received feedback from the university students and eliminated the drawbacks. We tested the materials that were designed for preschool children. With the feedback help, the mistakes were eliminated.

5-6) Approving and piloting the course:

Universities launched the BA course at their HEIs.

Conceptualization of the course and material

Subject/course title: Development of Digital Competences in Pre-School Education
Digital Competences and computational thinking Computer Science Education in ECEC

Target group: undergraduate students (BA programme)

Contact hours: 15 lectures + 30 tutorials

The aim of the subject

- development of digital competences and computational thinking skills for the development of computational thinkers

Goals of the subject

- developing educators' professional competences;
- developing educators' pedagogic competences (knowing digital resources, teaching, learning and assessment);
- developing and facilitating pre-school children' digital competences;
- developing computational thinking to understand the way how technologies work and actively communicate with computer (program or reprogram computer functions).

Course competencies

BA students will be competent (knowledge, skills, attitudes) in:

- digital professional engagement;
- using and investigating digital resources;
- using digital technology in teaching/learning & assessment;
- empowering learners & facilitating learners in digital competencies development;
- using and developing computational thinking skills and computer science concepts in pre-school education.

Theoretical background of the subject Digital Competences and Computer Science Education in ECEC

Following theoretical framework was used in the course design:

- **Computer science theoretical framework- computational thinking:**
 - computing without computers (<https://www.csunplugged.org/en/>)
 - DigCompEdu,
 - K12- Computer Science Framework)
- **Pedagogical theoretical framework**
 - constructivistic learning theory and socio-cultural theory (Vygotsky, Piaget, Rogoff)
 - participatory pedagogy (Rinaldi, Hart, Rutar, Formosinho and Pascal, Cameron)
- **Psycho-social theoretical framework:**
 - sustainability;
 - creativity, critical thinking, cooperation, communication, confidence, (Becoming brilliant);
 - well-being;

Course implementation process

Undergraduate students learn and develop digital competencies :

- through self-reflection, authentic problems, meaningful learning;
- derived from children's participation (his/her's topics);
- assessment and feedbacks through the process of documentation (children's and students' portfolio);
- to ensure and develop children's self-regulative learning,
- Students learn concepts through concrete and authentic experiences
- Students, colleagues and teachers conceptualize the knowledge by reflecting concrete experience. Teachers help them (scaffold) integrate partial concepts in theoretical framework of digital concepts)
- Students individually or in groups prepare projects, initialized by children and teachers (emergent, participatory curriculum), then applied in practice and documented/reflected

The aim of using e-portfolio on Mahara or Moodle platform

- **Goals:**
- professional self-direction and reflection,
- collecting and reflecting materials;
- cooperative, peer learning and reflection;
- exchanging ideas and materials on-line with colleagues/university students, peers.

Course modules content and process

- **Module 1: Developing professional digital competences of preschool-teachers**
 - My (students) professional, pedagogical credo: what I use, how I use, and why I use (digital technology in my professional work) .
 - My (students) vision in development of preschool children digital literacy.
 - My (students) plan to develop my personal-professional competencies to help/support children to develop children's digital competencies.
- **Module 2: Digital Resources**
 - students: write description of learned concepts, gained at the faculty
 - together with children: plan, realize and reflect activities which include learned concepts
- **Module 3: Teaching, Learning, Assessment and Empowering Learners (with computational thinking concepts and approaches...)**
 - students: write description of learned concepts, gained at the faculty
 - together with children: plan, realize and reflect activities which include learned concepts
- **Module 4: Facilitating Learners- children/ Digital Competencies**
 - students: write description of learned concepts, gained at the faculty
 - together with children: plan, realize and reflect activities which include learned concepts

Module 1: Developing professional digital competences of preschool-teachers

Competencies - students will be able to:

- Digitally professionally engage with colleagues
- Assess their own digital competencies
- Plan their professional development to improve their digital competency

Activities:

- professional assessment of using ICT My (students) professional, pedagogical credo: what I use, how I use, and why I use (digital technology in my professional work).
- developing: My **vision** in development of preschool children digital literacy
- developing: My **plan** to develop my personal-professional competencies to help/support children to develop children's digital competencies.

Process:

1. **e- portfolio with chapters: 1) self-evaluation, 2) vision and 3) professional plan**
2. **self-reflection of educators' digital competencies:** Selfie for teachers
3. **project work:** preparing a project / set of activities connected to chosen topic including productive and creative didactical use of digital technologies: 1) my vision in development of preschool children digital literacy, 1) my plan to develop my personal-professional competencies to help/support children to develop children's digital competencies.

Resources:

- Selfie: https://ec.europa.eu/education/schools-go-digital_en
- DigCompEdu: <http://www.digcomptest.eu/index.php?pg=facaSeuTestey>

Module 2: Digital resources

Competencies - students will be able to:

- to identify, assess and select digital resources for teaching and learning in early learning/pre-school period
- 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 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

Activities:

- exploration of appropriate digital resources for pre-school education and preparation of collection of them using digital tools for collaboration (e.g. Padlet)
- creation of digital educational resources for teaching and learning in early learning/pre-school period
- preparation of the collection of privacy and copyright rules appropriate for early learning/pre-school period

Process:

1. project work: exploration and selection of digital resources for pre-school education
2. e- portfolio with chapters: 1) digital resources for preschool education 2) digital resources for developing CT skills 3) digital resources for developing CS concepts 4) collection rules about privacy and copyright rules, open licenses and open educational resources and their attribution

Resources:

- DigCompEdu: <http://www.digcomptest.eu/index.php?pg=facaSeuTestey>
- K12- Computer Science Framework

Module 3: Teaching, Learning & Assessment (with computational thinking concepts and approaches...)

Competencies - students will be able to:

- consider the specific learning objective, context, pedagogical approach, and learner group, when selecting digital tools and resources and planning their use
- plan for and implement digital devices and resources in the teaching process, so as to enhance the effectiveness of teaching interventions
- use digital technologies to foster and enhance learner collaboration
- enable learners to use digital technologies as part of collaborative assignments, as a means of enhancing communication, collaboration and collaborative knowledge creation
- use digital technologies to foster learners' active and creative engagement with a subject matter
- use digital technologies within pedagogic strategies that foster learners' transversal skills, deep thinking and creative expression
- use digital technologies to support self-regulated learning processes, 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
 - understand the concepts and practices of Computer Science in Early Childhood Education
 - understand the Computational thinking concepts and approaches

Activities:

- students plan and prepare activities for pre-school children including use of digital technologies (digital tools and resources) consider the specific learning objective, context, pedagogical approach, and learner group
- students learn Computer Science concepts (important for preschool level) and developing computational thinking skills through concrete and authentic experiences:
- Social and Emotional learning: computer-supported collaborative learning: pair programming
- Patterns: recognize patterns through routines; identify and create repeated features
- Problem solving, representations, sequencing: solving authentic problems first at concrete level, then using robots, block-coding programme

- Students conceptualize the knowledge by reflecting concrete experience. Teachers help them (scaffold) integrate partial concepts in theoretical framework of digital concepts)

Process:

- through concrete and authentic experiences students use digital technologies as part of collaborative assignments, as a means of enhancing communication, collaboration and collaborative knowledge creation
- e- portfolio
- project work

Resources:

- DigCompEdu: <http://www.digcomptest.eu/index.php?pg=facaSeuTestey>
- K12- Computer Science Framework

Module 4: Empowering & Facilitating children Digital Competencies

Competencies - students will be able to:

- empower children to use digital technologies properly and actively;
- to encourage a child monitoring and documenting with the help of digital technologies;
- guide and support children in the development of computer thinking and digital competencies
- prepare projects for preschool children to learn and understand the concepts and practices of computer science in preschool education
- prepare projects for preschool children to understand the computational thinking concepts

Activities:

- Students prepare and incorporate learning activities, assignments and assessments which require children to effectively and responsibly use digital technologies for communication and collaboration, developing computational thinking skills and gain knowledge about computer science concepts.
- Students apply the activities in practice and document them/reflect on them

Process:

- E-portfolio
- Students will individually or in groups prepare projects, initialized by children and teachers
- Students will test the projects in practice and document / reflect on them

Resources:

- DigCompEdu: <http://www.digcomptest.eu/index.php?pg=facaSeuTestey>
- K12- Computer Science Framework

Evaluation of piloting BA course implementation

Students, included in the course implementation

	TARTU ULIKOOL, Estonia	PADAGOGISCHE HOCHSCHULE HEIDELBERG, Germany	LATVIJAS UNIVERSITATE, Latvia	UNIVERSITY OF PRIMORSKA, Slovenia
Students included in the course implementation	38	54	113	120, 1st year (2021/22), 74 2nd year (2022/23)

Period of the course implementation:

	TARTU ULIKOOL, Estonia	PADAGOGISCHE HOCHSCHULE HEIDELBERG, Germany	LATVIJAS UNIVERSITATE, Latvia	UNIVERSITY OF PRIMORSKA, Slovenia
Period of the course implementation?	Autumn semester 29.08.2022-29.01.2023	Summer Term 2022 11.4.2022-29-7.2022	Intensive course 09.01. - 23.01. 2023	15. february 2022- 5. june 2023

University students needs recognition - after course implementation

TARTU ULIKOOL, Estonia	The students brought forward, that the digital study map was very valuable and allows them to come back to all the materials which were in the course. Furthermore, from the feedback it appeared, that at some cases the students found it difficult to fill in the Selfie questionnaire, since it was targeted more on the school teachers, however most of the students did note that it was valuable to get the results as it gave a clearer overview of their skills and knowledge. Some students also appreciated the opportunity to work in groups while discussing for example their Selfie reports. Overall, it seems, that the digital study map is valuable and the sections where group work is needed are also good additions to the course. Furthermore, the the practical tasks/assignments with digital technology (learningapps/forced perspective photography etc) were valuable to the learners. As the students were inspired by the possibilities of digital technology, some of them mentioned that they would like to know more about how to get the devices through projects, however, I do feel that adding that element will go too far from the course and maybe should be designed as a follow up course.

<p>PADAGOGISCHE HOCHSCHULE HEIDELBERG, Germany</p>	<p>The time for practical application/trying out was very important and was well received by the students. The goal of working on the students' hesitations and fears in the use of the tools was achieved to a large extent.</p> <p>The connection between theory and practice can be improved. Especially at the beginning of the course, when students start planning for media projects in their internship: Students create projects without yet knowing the theoretical framework and without having the practical skills from the following sessions.</p> <p>It was difficult to convey an idea of the range of possible applications of digital media and technologies. For this, the combination with a work assignment for the internship was very successful.</p> <p>The topic of computer science and computer technology (also in the sense of computing without computers) should be further deepened but also 'classic media work' with photos, video and audio should not be neglected.</p>

<p>LATVIJAS UNIVERSITATE, Latvia</p>	<p>The course was adapted to the needs of the students- would be pre-school and primary school teachers. The aim of the course was to improve the digital competence of future preschool teachers; as well as promote the understanding of the importance of developing children's digital competence at an early age (3-6 years old) and the skills to develop children's digital competence in preschool.</p> <p>In the course we first updated future teachers' knowledge about the importance of technology in knowledge construction and the 21st century skill development, then promoted the improvement of teachers' digital competence by analyzing various ways of the development of children's digital competence in the preschool learning process and finally raised the awareness of the safe use of smart technologies.</p>

UNIVERSITY OF PRIMORSKA, Slovenia	<p>Safety is important issue and also recognition computing without computer. Preschool teachers are not aware of the need to ensure planned educational experience to practice computing without computing. Students' attitudes were mostly connected with the worries of fears that children are too often exposed to screens, unsupervised or guided use of technology.</p> <p>Students recognize that do not know enough resources which are available for educational reasons – digital apps, resources.</p>

Preschool childrens needs recognition – what has to be, has to stay in the content of the course

TARTU ULIKOOL, Estonia	<p>When taking preschool children into consideration, the students brought forward that as the course gave them many practical skills, ideas and courage to implement digital devices in preschool, they still lack in knowledge in how to really support learning different skills with these devices and for example how to use technology (digital environments) for formative assessment of the children. As these aspects need more knowledge and experience (and the students in the course were mainly only beginner level users of digital devices) I wonder if and how it could be added to the course. Another upside is, that many students brought forward the value of computing without computers and teaching programming concepts without robots etc and they felt that this was valuable part of the course as it allows to teach the children these skills even when there are no devices.</p>

PADAGOGISCHE HOCHSCHULE HEIDELBERG, Germany	<p>The specific implementation in the internships depended very much on the age of the target group. Particularly in the crèche age group (0 to 3 years), very careful consideration had to be given to what could be implemented.</p> <p>In general, it turned out to be very important to define precise goals for the use of media for the children, so that it is not a matter of using media for its own sake.</p>

LATVIJAS UNIVERSITATE, Latvia	<p>It contained the following topics:</p> <ol style="list-style-type: none"> 21st century skills. Digital competence. (L2, S2) Digital Competence Framework (DigComp). Information and data

	<p>literacy. Communication and cooperation. Digital content creation. Safety. Problem solving.</p> <p>2. Planning and implementation of digital competence development. (L2, S4) Analysis of children's digital competence development, discussions, search for solutions. Analysis of good practice examples.</p> <p>3. Methods, technologies and tools for promoting the development of children's digital competence in a preschool educational institution. (L2, S6) Methods, technologies and tools that encourage children to analyze, think, communicate, collaborate and reflect in order to acquire, accumulate and create content and exchange information in the learning process.</p> <p>4. Exchange of experience in a preschool educational institution. (L2, S12) Getting to know different technologies, tools and approaches by observing and analyzing lessons; as well as meeting with preschool managers and teachers. L-lectures, S-seminars</p> <p>The students had to complete the following independent assignments:</p> <p>1. Observation and analysis of learning activities with technologies and media. Defines the aim of the activity and expected outcomes in relation to promoting the development of digital competence. Analyzes the activity, paying attention to the ability of both the teacher and the children to use technology to acquire, accumulate, create, evaluate and exchange information in order to communicate and collaborate safely using the possibilities of the Internet and technology; ability to confidently and critically use information technology in education. Individual and group work.</p> <p>2. Analysis, compilation and creation of teaching materials and tools Analysis of children's digital competence development, discussions, search for solutions. Analysis of good practice examples. Analyzing, compiling and/or creating learning materials and tools to promote the development of digital competence. Group work.</p> <p>3. Self-assessment. Assessment and analysis of your digital competence. Setting future goals for the development of digital competence.</p>
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<p>UNIVERSITY OF PRIMORSKA, Slovenia</p>	<p>Children have to have enough time to experiment first and after that create content, Children use mobiles at home, but not under clear parents supervisions,</p>

Topics to be added in the course – recognition during the implementation process

TARTU ULIKOOL, Estonia	In the Estonian course the university cooperated with Rakvere Rohuaia kinderkarten where the uni students could get familiar with different robots with the help of active teachers (as we do not have such devices in college). Almost all the students mentioned that this was very valuable part of the course. Learning from practitioners seemed to be most valuable addition. One more aspect of using digital technology in preschool that could be focused on is how to implement the knowledge and skills in “real life” - most of the activities are designed for smaller group of students, so how to divide attention/work with teachers in order to carry out activities with digital devices; another question is about using technology with special education children – how, when, etc it should be done and how can it help. Maybe to focus more on literature in this area and perhaps an expert on the field could share their experience.

PADAGOGISCHE HOCHSCHULE HEIDELBERG, Germany	Age- or development-dependent possibilities and goals of media work. The course have to incorporate legal aspects (children's rights, copyrights, children's media protection), data protection.

LATVIJAS UNIVERSITATE, Latvia	<p>Students’ feedback:</p> <p>The program is good and necessary for work in a preschool institution. Thank you for the opportunity to participate in the courses, I gained excellent knowledge and shared experience.</p> <p>Thank you for an interesting and well-prepared course program. I got a lot of advice for my pedagogical growth, and it was also very valuable to listen to other students' opinions and experiences.</p> <p>Thanks to everyone involved in the creation of this program. With its help, we tackle our task more safely, more fully, more meaningfully. New insights could be gained for future work.</p> <p>Well structured courses. The proportion of theory and practical lessons gave me the opportunity to improve myself, my knowledge and skills. Hear and see both the good preparation and knowledge of the course lecturers and the experience of colleagues.</p> <p>What we heard in the content of the course made it possible to make sure that what we are doing is correct, of course, other useful knowledge was also provided</p> <p>Very appropriate material that will be useful not only when working in preschool, but also as a teacher. I got a lot of information about different digital tools to use in the distance learning process itself.</p> <p>Thank you for the opportunity to participate in these courses. There was useful information for a preschool teacher.</p> <p>Thanks to the organizers. I gained a lot from other colleagues who shared their experience both in working in kindergarten and in general about working in educational institutions.</p>

Thank you for the opportunity to participate in this program! I believe that every school should have a trained pedagogue who undertakes the responsibility of providing support to new pedagogues.

Thank you for the very valuable materials and the course in general!!!

Very useful program. We learned both classic examples and theory, as well as the latest research and trends in preschool education.

During the course, I received a lot of high-quality information and theoretical knowledge that I can apply in practice.

The program is very useful for current events - new teachers absolutely need it to stay in the preschool environment so as not to burn out.

The most important thing for me from these courses was that I had the opportunity to hear the experiences of other colleagues, thus understanding what to do differently or what I am already doing well and correctly. Being a preschool teacher as well, I knew a lot of things, but anything that is repeated is good. Useful e-materials, such as a questionnaire designed to assess your digital skills and understanding of safe media. Although it is very voluminous, there are still things to take for yourself. Since I was "thrown" into this in September (I don't regret it :)), it would have been good if the course had already taken place in August or September, because then I probably would have done something differently. But this is a good challenge.

Very professional, educational courses. I like.

Since I participated in such courses for the first time, I listened to the content of the courses with real information. Many practical things will be useful not only to me as a kindergarten teacher, but also as a subject teacher.

Useful materials. An opportunity to look at work from another side.

Availability of all materials.

Lots of valuable advice and practical advice, as well as inspiring stories. Very positive atmosphere.

The program is very well thought out. If the teacher is inexperienced, then such a program is very useful. Received useful materials that can be used at work.

Thank you! It was very helpful and above all inspiring. In this time of overload, it was almost impossible to find time to do homework. The opportunity to share experiences with colleagues was also very useful. It is important that the presentations were relevant.

Interesting program. There are things to take for your work.

Created a sense of security, helped to navigate, because not everyone is experienced and methodical. Provided useful knowledge and support.

Thank you for this opportunity to attend the courses. Necessary and usable materials were obtained, which I also shared with the preschool administration - methodologist. It is very good that you also gave an insight into the topics that the future teachers have learned. I hope to use the materials in the future work as well, because in some topics you can see some new aspects, for example, work with parents.... I apologize for not submitting the report works on time.

The number of lessons in the program is definitely too small.

I liked the demonstration of the practical tools and the quality of the materials provided

	Great solution was to deliver the course in cooperation with the private preschool CreaKids: the visit to kindergarten and the possibility to explore their community created online digital materials was a great benefit to the course.
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UNIVERSITY OF PRIMORSKA, Slovenia	We have to focus on development of digital competencies for children over 3 years old. Computing without computing could be also under 3 years old.

Summary of the course implementation

1. Prior the course implementation was developed the document, **e-portfolio** to empower BA students' professional development in the process of a) self-evaluation, b) planning, c) recording their learning process with the content, d) record their professional progress
2. **Students had opportunity to** assess their knowledge at the faculty- with the Selfie (DigCompEdu) – professional development
3. **Students** learn, gain knowledge of digital tools, developmentally appropriate resources for teaching in preschools and using for educational purposes at the faculty
4. **Students** a) plan activities where students use digital technology for educational purposes and/or activities where the children themselves, with the support of a university student, used technology in the educational process, b) implement digital tools in practice at the internship and c) reflect on their experiences on using digital tools in preschools/kindergartens during their internships. They reflect also with children.
5. **Students** reflect in the group - in e-portfolio
6. **Students** reflect on implementation at the faculty, together with colleagues

Main findings:

- students need clear structure of the content (DigCompEdu) and e- portfolio to self-regulate their progress – to plan, follow, self-regulate their own learning process;
- professional self-reflection- Selfie (DigCompEdu) is important to recognize the a) content of digital literacy and b) their attitudes,
- students have to have opportunity to work in groups to learn from each other;
- children first need time to explore equipment and after that create, use the tools;
- using digital tools have to be clearly connected with the educational aim/goals...using tools without clearly defined goals is meaningless and do not add the value in digital literacy;
- children under 3 years do not need to use digital tools in learning process– have difficulties to connect digital tools and tasks;
- attitudes are the most important part of preschool students development...they can change it by implementation and reflection on using digital tools with children...experiential learning is essential.

BA Programme

Leading partner propose the conceptual framework and template of the course. Each country after piloting adapt the course to incorporate it in their own context- the undergraduate early childhood education programme.

BA Slovenia

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Course title:	Development of Digital Competences in Pre-School Education

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Preschool education, 1. level	Preschool education	1	2

Vrsta predmeta / Course type

Univerzitetna koda predmeta / University course code:

Lectures	Seminar	Tutorial	Laboratory work	Field work	Individ. work	ECTS
15	/		25	5		3

Lecturer:

Languages/Lectures:
languages/Tutorial:

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:
Prerequisites:

Vsebina:

- Razvoj in evalvacija profesionalnih digitalnih kompetenc vzgojiteljev;
- teoretični okvir: računalniško mišljenje,
- računalništvo brez računalnika, robotika v predšolskem izobraževanju

Content (Syllabus outline):

- Development and assessment of preschool teachers professional digital competencies
- development and assessment of teachers' professional digital competences;

- digitalni izobraževalni viri;
- učenje in poučevanje, vrednotenje in opolnomočenje učencev o konceptih in pristopih računalniškega mišljenja skozi participativno vzgojo in izobraževanje;
- personalizirano vodenje in podpora pri razvijanju digitalnih kompetenc otrok.

- theoretical framework- computational thinking, computing without computers, robotics in pre-school education;
- digital resources in education;
- teaching, learning, assessment and empowering learners (with computational thinking concepts and approaches, participatory pedagogy);
- personalized learning and facilitating children digital competencies.

Reading:

- Computing without computers (b. d.). <https://www.csunplugged.org/en/>
- DigCompEdu, https://joint-research-centre.ec.europa.eu/digcompedu_en
- Gadzikowski, A. (2017). *Robotics for young children: STEM activities and simple coding*. Redleaf Press.
- K12- Computer Science Framework (b. d.). <https://k12cs.org/pre-k/>
- Krajnc, R., Košir, K. in Čotar Konrad, S. (2017). Računalniško mišljenje - kaj je to in zakaj bi ga sploh potrebovali? *Vzgoja in izobraževanje: revija za teoretična in praktična vprašanja vzgojno izobraževalnega dela*, 48(4), 9-19.
- Punie, Y. (ur.) in Redecker, C. (2017). *European Framework for the Digital Competences of Educators: DigCompEdu*. Publications Office of the European Union. Doi: 10.2760/178382.
- Rutar, S. (2013). *Poti do participacije otrok v vzgoji*, Koper: Univerza na Primorskem, Znanstveno-raziskovalno središče, Univerzitetna založba Annales.

Cilji:

- razvijanje profesionalnih digitalnih kompetenc bodočih vzgojiteljev;
- razvijanje pedagoških kompetenc bodočih vzgojiteljev (poznavanje digitalnih virov, poučevanja, učenja in ocenjevanja).
- razvijanje digitalnih kompetenc študentov za spodbujanje razvoja digitalnih kompetenc predšolskih otrok
- razvijanje računalniškega mišljenja za razumevanje načina delovanja tehnologij in aktivno komuniciranje z računalnikom (programiranje ali reprogramiranje funkcij)

Splošne kompetence:

- Zmožnost učinkovitega načrtovanja, poučevanja in spremljanja razvoja in učenja
- uporaba digitalnih tehnologij v pedagoškem procesu oziroma razvijanje informacijske pismenosti pri otrocih,
- sposobnost samokritičnega premisleka o lastnem delu in njegovega vrednotenja.

Objectives and competences:

Objectives:

- developing the professional digital competences of future pre-school teachers;
- developing future pre-school teachers' pedagogic competences (knowing digital resources, teaching, learning and assessment)
- developing digital competencies of students to facilitate pre-school children' digital competences
- developing computational thinking to understand the way how technologies work and actively communicate with computer (program or reprogram functions)

General competences:

- Ability to plan, teach and monitor development and learning effectively

Predmetnospecifične kompetence:

- zmožnost rabe digitalnih tehnologij za komuniciranje, sodelovanje in profesionalni razvoj,
- uporaba in raziskovanje digitalnih virov;
- uporaba digitalnih tehnologij pri poučevanju/učenju in spremljanju ter dokumentiranju;
- opolnomočenje in spodbujanje otrok pri razvoju digitalnih kompetenc;
- uporaba in razvijanje spretnosti računalniškega mišljenja in konceptov računalništva v predšolski vzgoji

- Use of digital technologies in the teaching process or developing children's information literacy,
- the ability to reflect self-critically on and evaluate their own work.

Subject specific competences:

- digital professional engagement;
- using and investigating digital resources;
- using digital technologies in teaching/learning, assessment and documenting;
- empowering and facilitating children's digital competencies development;
- using and developing computational thinking skills and computer science concepts in pre-school education

Predvideni študijski rezultati:

Znanje in razumevanje:

- razume koncepte in pristope računalniškega mišljenja
- razume koncepte in prakse računalništva v predšolski vzgoji in izobraževanju
- razume uporabo in oblikovanje odprtih licenc in odprtih izobraževalnih virov, vključno z ustreznim priznavanjem avtorstva.

Uporaba:

- oceni lastno digitalno kompetentnost;
- pri izbiri digitalnih orodij in virov ter načrtovanju njihove uporabe upošteva specifični učni cilj, kontekst in skupino otrok;
- načrtuje svoj strokovni razvoj za izboljšanje svojih digitalnih kompetenc;
- spreminja in nadgrajuje obstoječe vire z odprto licenco in druge vire, kjer je to dovoljeno;
- ustvarja ali soustvarja nove digitalne izobraževalne vire in jih daje na voljo otrokom, staršem in sodelavcem;
- učinkovito zaščiti občutljive digitalne vsebine;
- načrtuje in uporablja digitalne naprave in vire v učnem procesu, da bi povečal učinkovitost poučevanja;

Intended learning outcomes:

Knowledge and understanding:

- understand the Computational thinking concepts and approaches
- understand the concepts and practices of Computer Science in Early Childhood Education
- to understand the use and creation of open licenses and open educational resources, including their proper attribution.

- Application:
- assess their own digital competencies;
- plan their professional development to improve their digital competency;
- identify, assess and select digital resources for teaching and learning in early learning/pre-school period;
- 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 and make it available to learners, parents and other educators;

- uporablja digitalne tehnologije za spodbujanje in izboljšanje sodelovanja pri učenju;
- omogoča otrokom uporabo digitalnih tehnologij kot del skupnih nalog, za izboljšanje komunikacije, sodelovanja in skupno ustvarjanje znanja;
- uporablja digitalne tehnologije v okviru pedagoškega procesa za poglobljeno razmišljanje in ustvarjalno izražanje;
- uporablja digitalne tehnologije za podporo samoregulacijskih učnih procesov,
- opolnomoči otroke za pravilno in aktivno uporabo digitalnih tehnologij;
- spodbuja otrokovo spremljanje in dokumentiranje s pomočjo digitalnih tehnologij;
- pripravi projekte za predšolske otroke za učenje in razumevanje konceptov in praks računalništva v predšolski vzgoji;
- pripraviti projekte za predšolske otroke za razumevanje konceptov računalniškega mišljenja.

Refleksija:

- spoštuje in pravilno uporablja pravila o zasebnosti in avtorskih pravicah;
- razmišlja o etičnosti uporabe različnih vsebin in tehnologije.

- to effectively protect sensitive digital content;
- plan for and implement digital devices and resources in the teaching process, to enhance the effectiveness of teaching interventions;
- use digital technologies to foster and enhance learner collaboration
- enable learners to use digital technologies as part of collaborative assignments, as a means of enhancing communication, collaboration and collaborative knowledge creation;
- use digital technologies to foster learners' active and creative engagement with a subject matter;
- use digital technologies within pedagogic strategies that foster learners' transversal skills, deep thinking and creative expression;
- use digital technologies to support self-regulated learning processes, 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;
- empower children to use digital technologies properly and actively;
- to encourage a child monitoring and documenting with the help of digital technologies;
- guide and support children in the development of computer thinking and digital competencies;
- prepare projects for preschool children to learn and understand the concepts and practices of computer science in preschool education;
- prepare projects for preschool children to understand the computational thinking concepts.

Reflection:

- to respect and correctly apply privacy and copyright rules;
- reflecting on the ethics of different content and uses of technology.

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Metode poučevanja in učenja:Oblike dela:

Individualno, v dvojicah, skupinsko delo

Metode dela:

e- učilnica

e- portfolijo

Learning and teaching methods:Working arrangements:

individual, pairs, group work

Working methods:

e- classrooms

e- portfolio

Načini ocenjevanja:Delež (v %) /
Weight (in %)**Assessment:**

Način (pisni izpit, ustno izpraševanje, naloge, projekt)	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
e- portfolijo	100 %	e- portfolio

Reference nosilca / Lecturer's references:

Klančar, A., Istenič, A., Cotič, M. in Žakelj, A. (2021). Problem-based geometry in seventh grade: examining the effect of path-based vs. conventional instruction on learning outcomes. *International journal: emerging technologies in learning*, 16(12), 16-35. <https://online-journals.org/index.php/i-jet/article/view/21349/9377>, DOI: 10.3991/ijet.v16i12.21349.

Krajnc, R., Košir, K. in Čotar Konrad, S. (2017). Računalniško mišljenje - kaj je to in zakaj bi ga sploh potrebovali?. *Vzgoja in izobraževanje: revija za teoretična in praktična vprašanja vzgojno izobraževalnega dela*, 48 (4), 9-19.

Rutar, S. in Štemberger, T. (2018). How children are manipulated and how they participate: Preschool teachers' and preschool teacher assistants' perspectives. *Journal of Contemporary Educational Studies/Sodobna pedagogika*, 69(1), 146-161.

Štemberger, T. in Čotar Konrad, S. (2021). Attitudes towards using digital technologies in education as an important factor in developing digital competence: the case of Slovenian student teachers. *International journal: emerging technologies in learning*, (16)14, str. 83-98, <https://online-journals.org/index.php/i-jet/article/view/22649/9629>, DOI: 10.3991/ijet.v16i14.22649.