

Erasmus+ project

DIGGING

DIGital competences for engaGING future educators

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NEEDS ANALYSIS

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Educator digital competence improvement needs from the perspective of principals, professors and students of Education - focus group discussion

Methodology

A focus group was organized to gather opinions on developing digital competences for future educators. The participants included a doctoral-level education science student who is also a teacher, a professor and dean of the Faculty of Pedagogy, and a school principal who is also a teacher. To maintain anonymity, participants were identified with codes: student (S), school principal (SP), and professor (P).

At the start of the discussion, the moderator provided a brief overview of digital competences to ensure a shared understanding of the topic. Each participant was then asked specific questions related to their area of expertise, and a moderated conversation followed, with participants exchanging their views and reacting to the information presented by others. The conversation was recorded, transcribed, and summarized for analysis.

The discussion was conducted online, lasted for 60 minutes, and was conducted in Latvian. The information has been translated into English for this publication. The study adhered to ethical research standards in accordance with the General Data Protection Regulation (GDPR).

Results

The focus group discussion yielded several conclusions regarding the development of digital competences for educators, supported by quotes from the participants.

Firstly, all aspects of digital competences are relevant to educators, with their importance increasing during the COVID-19 pandemic. Secondly, teacher education should prioritize pedagogical digital competences, which encompasses the skills to both use and create new digital solutions for education. Lastly, educators should not only be proficient in using digital solutions themselves but also capable of integrating them into their teaching and instructing students on their use.

SP: Teachers should be able to access digital content concerning their subject, collect and store data about their students, and help students learn remotely. Understand and observe safety in the digital medium.

P: Teachers have to be able to choose and also create pedagogically appropriate DS for learning. DS that directs student attention towards and helps them focus on learning.

SP: Digital competences are transversal skills demanded to be taught in standards of all age groups of students. Teachers should not only be digitally competent, but also able to teach their students to use DS.

Educators acknowledge the need for further integration of digital solutions (DS) into the learning process, blending them with face-to-face instruction. However, they currently feel unprepared for this shift and hold a negative attitude towards it due to feelings of insecurity. Additionally, many available DS are not suitable for educational purposes, so it is crucial to evaluate and select the most appropriate ones that can facilitate rather than complicate everyday work for both educators and students. It is

risky for educators to create DS that do not align with educational goals, as this can reinforce their negative perception of digitalizing education.

SP: It is clear that we are not going back to how it was before COVID-19 pandemic. Learning in the digital medium is here to stay. And teachers should be able to support students in learning both on site and remotely. Furthermore, implementing opportunities offered by DS in everyday learning is important as well.

S: It is important to try out new DS, evaluate whether the use of it has been successful, consider learning goals and then decide whether to use it further or not.

SP: Teachers in my school are not ready to teach digital competences for elementary school students in an integrated way. They are just not confident enough to be able to do it. We provided a separate technology teacher for it.

Despite the importance of digital solutions in education, it is not advisable to force all educators to use them. It is crucial to respect that some educators may hold a negative attitude towards DS and allow them to conduct lessons in the format they prefer, while emphasizing that students have the opportunity to learn the planned content regardless of the learning format. Moreover, organizing the learning process digitally, including creating new digital content, is a time-consuming and expensive process, and there is often insufficient funding available to support it.

SP: Our school lost 2 good teachers, who were not ready to use DS in their lessons. Teachers should still have the opportunity to choose the methods they use for teaching. Even if those do not include digital solutions.

P: If a teacher has good learning results in an analog format and is not ready to shift towards using DS it is important to provide an opportunity to keep working in his/her chosen way. We did not have choice during fully remote learning during COVID-19 pandemic, but we do have it now.

S: Teachers are very busy, providing support for students to learn digitally and creating digital solutions for it is very time consuming. It is important to ask ourselves: will every teacher be ready to create digital content and will we be able to pay them for it?

The incorporation of digital solutions (DS) in education promotes independence and autonomy among students, which is why it is highly probable that they will demand a different learning process following the COVID-19 pandemic and their experience with remote learning. As a result, educators must be prepared to adapt to this new reality.

SP: Students learn a lot from screens, using visual materials. We can fight against that and offer them books but it is highly unlikely it will work. We have to go further and develop pedagogically appropriate DS for learning.

SP: Teachers are intimidated by technology. Even though they might be ready to learn to use DS, on an emotional level they are still unsure and feel a lot safer when teaching in an analog way.

While there are no significant differences in basic digital competencies among educators of different age groups, variations do emerge at more advanced levels of digital proficiency. Both younger and older educators may exhibit reluctance towards incorporating digital solutions (DS) in education. Additionally, educators may find it challenging to comprehend the learning experiences of their students, which can differ significantly from their own, and this can negatively impact their motivation to use DS.

SP: It is hard for some educators to empathise with students who prefer digital medium for learning to learning from books. Because they have not had such learning experience themselves.

P: There are no differences amongst educators in basic digital competence levels. Differences emerge at higher levels, such as programming, that all students don't have and are unlikely to obtain soon. This competence is influenced to large extent by the attitude of students towards DS. Not all DS are easy to master, learning to use some of them take effort and time, therefore persistence is of great importance.

Educators' desire to enhance their digital competences increases as they acquire positive experiences using technology. Therefore, it is crucial to create such experiences consistently, gradually, and at a suitable pace, while also providing the necessary support for educators to learn and apply digital solutions (DS) confidently in their daily practice. When teaching how to improve digital competences, it is crucial to demonstrate its practical application.

P: If it is hard to use DS, then a negative attitude is formed towards this DS. Which in turn can make the DS undesirable to use. If it is not used, competences to use it are not developed. If there are no competences in using DS - it will not be used. Therefore creating step by step DS using experience and positive attitude towards using the DS is crucial. There are DS that are intuitive and easy to master, but there are also those that can be cumbersome to learn to use but are still crucial for learning.

SP: It is crucial for teachers to feel safe when using DS for them to try it again. It is also crucial to be consistent with using DS in the agreed ways to implement it at an organisational level. What can seem very easy for digitally competent users, is much more complicated for those developing their digital competences. This possibly causes more problems in teacher further education for developing digital competences.

S: It is important to demonstrate DS, give time to try it out. Have to teach students and other teachers to learn new DS themselves. Provide freedom to choose which DS to use for particular needs.

SP: Teachers are motivated to learn DS if they feel successful doing it. Small steps are crucial to provide this sense of success. Also teachers have to see the point of using DS to be invested in learning to use it.

SP: Teachers are interested in professional development concerning their digital competences development. They understand this is and will be important. Even though they are not always pleased with using DS in their practice.

Remote learning, including online education, poses several risks, particularly for high school students who are at a heightened risk of dropping out of school due to the COVID-19 pandemic. Some students opt to work instead of continuing their education.

SP: We lost several highschool students during the pandemic. They chose working over education.

P: There are students that have only gained from remote learning. Meanwhile there are also those who have not learned some of the content. I am also concerned about high highschool students, who leave education in order to work. We lose the opportunity to support them.

Certain aspects of the learning process, such as assessment, are more challenging to implement successfully in online education. Moreover, some students lack the necessary skills to organize their learning and participate successfully in online education. On the other hand, the shortcomings of online education are more apparent when students are not engaged in the learning process, which is less noticeable in a traditional classroom setting.

P: DS in online lessons, if structured accordingly, help to follow the progress of every student. This is perhaps even more effective than when learning in the classroom.

S: I can not assert that I have found a good way to evaluate students in the remote learning process. Motivation and self discipline is very important for students to be successful in the remote learning process. Not all students succeed. For some students I lacked any information on their progress.

References to publications

Sarva, E.; Lāma, G.; Oļesika, A.; Daniela, L.; Rubene, Z. Development of Education Field Student Digital Competences—Student and Stakeholders' Perspective. *Sustainability* 2023, 15, 9895. <https://doi.org/10.3390/su15139895>

Digital competence improvement needs from the perspective of educators

Methodology

Based on the DigCompEdu framework an instrument was designed to collect information about participants' learning preferences in topics connected to technology enhanced learning by both determining their perceived usefulness of different aspects of technology enhanced learning and assessing their existing expertise in these areas. It was decided to use specific best practice examples concerning technology enhanced learning rather than descriptions of proficiency levels that tend to be widely interpreted and hence might not yield precise results. Specific examples also have the potential to give a better insight into possible learning outcomes hence helping participants formulate more specific learning goals which is one of the planned outcomes of this instrument. Multiple-choice tests were dismissed in this case for several reasons including the nature of learning content the tool was designed for - improving competencies rather than specific knowledge.

A flexible sequential design was used in this study and four consecutive research cycles were implemented.

Firstly, a group of 31 educators in compulsory education for computer science and programming tested the tool to determine its validity and improve it for wider use. Based on their feedback, adjustments were made, such as shortening some statements and adjusting the wording.

Next, the improved tool was offered to 7 experts in educator professional development who carried out self-evaluation and participated in a focus group discussion to suggest further improvements. The statements were further adjusted to improve clarity and better unify their form.

In the final stage of the research, the tool was used to gather information on the pedagogical digital competence of educators from preschool to high school levels. The responses of 414 participants were analyzed and used as the first activity in a 2-year professional development course to improve pedagogical digital competencies and become mentors in educational technologies.

After analyzing the results, some adjustments were made, such as removing one question from the introductory part and grouping rarely chosen options under "other" for two questions. An additional type of digital solution for education was also added, and the option to freely type in answers was removed. The concluding part was also shortened to ease data analysis, and educators were asked to choose one of their professional roles to focus on when evaluating their performance.

The tool underwent several iterations before arriving at the final version, which comprised of three distinct parts. The introductory information section contained questions related to the respondent's work experience, student age group, subject area, the number of students in the educational institution, and types of digital solutions successfully used in teaching and learning. The data collected from this section was used to provide context and to interpret the results. The second section consisted of a set of 38 statements that described best practices for carrying out technology-enhanced learning. These statements covered all six areas of the European Digital Competence Framework for Educators (DigCompEdu), along with an explanation of each area. Respondents were required to evaluate the importance of each statement for carrying out high-quality technology-enhanced learning using a Likert scale with seven levels ranging from "not important" to "very important," including an option for "cannot evaluate." They were also asked to indicate to what extent they implemented each practice in their work using a Likert scale with eight levels ranging from "not at all" to "fully," including options for "cannot evaluate" and "not at all, I do not consider this necessary." The concluding section included an optional open-ended question for comments. The data collected from this section was used to gather feedback and potentially improve the tool.

The gathered data was compiled in Google Spreadsheet. Duplicate or otherwise invalid answers were removed. The remaining answers were anonymized. Both Google Spreadsheet options and SPSS options were used for further data sorting, analysis and visualization.

Results

To determine how educators prefer to learn about pedagogical digital competencies, we calculated the difference between their evaluations of the importance of certain statements in providing technology-enhanced learning and their self-evaluations of implementing these statements in practice. We counted the number of responses that rated each statement as important or very important and compared it to the number of responses stating that educators already implement these statements enough or entirely. By subtracting these values, we identified which statements educators find more important but struggle to implement fully, creating a list of their learning preferences (see Fig. 1). This information was then used to develop content for a professional development course.

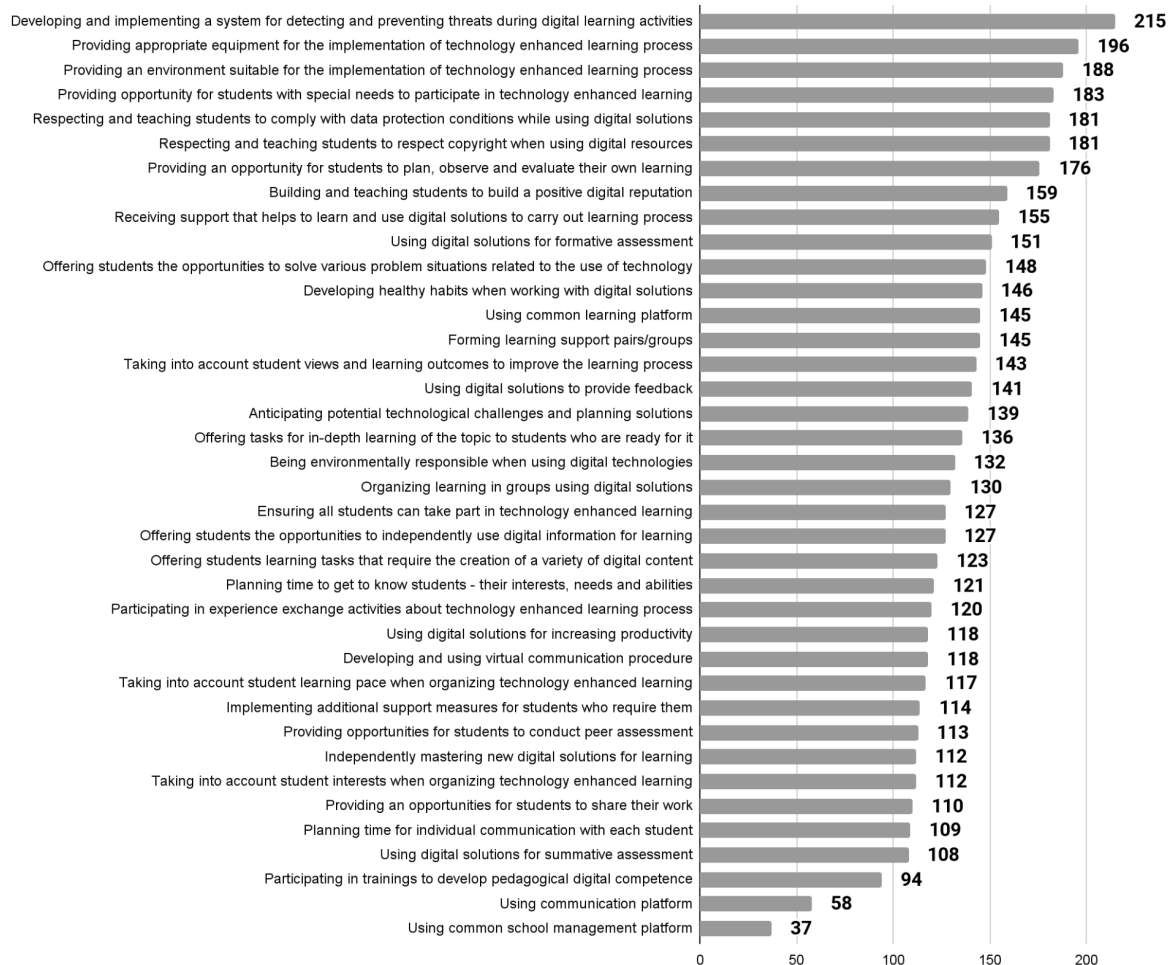


Figure 1. Educators' learning preferences concerning pedagogical digital competence (subtraction between importance and implementation)

References to publications

Sarva, E., Purina-Bieza, K. E., SELF-EVALUATION INSTRUMENT FOR MEASURING EDUCATORS' PEDAGOGICAL DIGITAL COMPETENCE. INTED 2022 conference proceedings.

DIGGING for development or educator digital competences

Project Digging concentrates on developing tools to measure students' nuanced needs in digital competence development. The collected data is crucial for crafting precise support materials tailored to address the specific requirements of students. This not only highlights the exact needs of students but also offers essential support to enhance digital skills in the areas where it is most needed.