PEDAGOGICAL ASPECTS OF STUDENTS' DIGITAL COMPETENCE DEVELOPMENT

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ABSTRACT

The purpose of the research was to study the pedagogical aspects of students' digital competence development and the degree of teachers' encouragement to develop their own professional digital competence. The study is based on quantitative and qualitative methodology and contains an online structured interview of 132 teachers of Ukraine who took an online course on the development of digital competencies. Results. University teachers demonstrated different beliefs and effectiveness in the use of ICT for pedagogical purposes. Although a few teachers seamlessly integrated ICT into the learning process, most were more tool-oriented and supported a teacher-rather than student-centered approach when designing online courses. In a pandemic, teachers are massively interested in the development of digital competence as part of professional development. At the same time, the strategy of the university and the practice of functioning of the university testify to the lack of a course for the implementation of absolute digital pedagogy.

Keywords: Digital competence. Pedagogical preconditions of digital competence. Online learning programs. Innovative teaching methods.

ASPECTOS PEDAGÓGICOS DO DESENVOLVIMENTO DE HABILIDADES DIGITAIS DOS ALUNOS

ASPECTOS PEDAGÓGICOS DEL DESARROLLO DE COMPETENCIAS DIGITALES DE LOS ESTUDIANTES

RESUMO

O objetivo da pesquisa foi estudar os aspectos pedagógicos do desenvolvimento da competência digital dos alunos e o grau de incentivo dos professores a desenvolverem sua própria competência digital profissional. O estudo é baseado em metodologia quantitativa e qualitativa e contém uma entrevista estruturada online de 132 professores ucranianos que fizeram um curso online sobre o desenvolvimento de habilidades digitais. Resultados. Os professores universitários demonstraram diferentes crenças e eficácia no uso das TIC para fins pedagógicos. Embora alguns professores tenham integrado perfeitamente as TIC no processo de aprendizagem, a maioria foi mais orientada para ferramentas e apoiou uma abordagem centrada no professor em vez de centrada no aluno ao projetar cursos online. Em uma pandemia, os professores estão extremamente interessados em desenvolver competência digital como parte do desenvolvimento profissional. Ao mesmo tempo, a estratégia da universidade e a prática do funcionamento da universidade atestam a falta de um curso para a implementação da pedagogia digital absoluta.

Palavras-chave: Competência digital. Pré-condições pedagógicas de competência digital. Programas de aprendizagem online. Métodos de ensino inovadores.

RESUMEN

El objetivo de la investigación era estudiar los aspectos pedagógicos del desarrollo de la competencia digital de los estudiantes y el grado de estímulo del profesorado para desarrollar su propia competencia digital profesional. El estudio se basa en la metodología cuantitativa y cualitativa y contiene una entrevista estructurada en línea de 132 profesores de Ucrania que tomaron un curso en línea sobre el desarrollo de competencias digitales. Resultados. Los profesores universitarios demostraron diferentes creencias y eficacia en el uso de las TIC con fines pedagógicos. Aunque algunos profesores integraron sin problemas las TIC en el proceso de aprendizaje, la mayoría estaban más orientados a las herramientas y apoyaban un enfoque centrado en el profesor en lugar de en el alumno al diseñar cursos en línea. En una pandemia, los profesores están enormemente interesados en el desarrollo de la competencia digital como parte del desarrollo profesional. Al mismo tiempo, la estrategia de la universidad y la práctica del funcionamiento de la universidad atestiguan la falta de un curso para la implementación de la pedagogía digital absoluta.

Palabras-clave: Competencia digital. Condiciones previas pedagógicas de competencia digital. Programas de aprendizaje en línea. Métodos de enseñanza innovadores.

INTRODUCTION

Teachers form the prerequisites for the development of digital competence of students. A problem-oriented approach can stimulate the development of competence, promote the involvement of students in the educational process, while requiring systematic and time. Active use of technology by students in education contributes to the growth of responsibility for results and the development of digital skills. The development of students' digital competence requires teachers to use digital technologies holistically and in the long run (PÖNTINEN & RÄTY-ZÁBORSZKY, 2020). In the educational environment over the past ten years, the amount of knowledge about digital competence has increased significantly (PETTERSSON, 2018). At the same time, few studies study the pedagogical aspects of the formation of digital competencies of students. In the context of the spread of the pandemic, ICTs are integrated massively into the educational process, which requires the study of new approaches to the development of digital competence of students (PETTERSSON, 2018). As a result, pedagogy is becoming increasingly digital, which requires the adaptation of universities to changing external conditions and challenges (FROM…, 2017). In developed countries, there are challenges in promoting the digital competence of students, particularly in the area of self-efficacy (GUDMUNDSDOTTIR & HATLEVIK, 2018). If before the pandemic, technological solutions were poorly integrated into student curricula (TØMTE, ENOCHSSON, BUSKQVIST & KÅRSTEIN, 2015), in the context of the spread of Covid-2019, teachers are actively using ICT in the educational process, in particular to develop digital competencies. This requires the study of transformational processes of pedagogy in order to develop students' digital skills.

The concepts of "Computer literacy, media literacy, digital literacy" (KRUMSVIK, 2008) are increasingly used by scientists in studying the outlined issues. Research on the pedagogical aspects of the development of students' digital competence focuses on the pedagogical and didactic context of digital pedagogy (CAZCO et al., 2016; SILVA et al., 2019). The scientific literature discusses the need to strengthen knowledge about the pedagogical aspects of ICT integration in order to develop digital competence of students (CAZCO et al., 2016). To achieve the goals of national policies, teachers need to update systematically digital competencies, respectively; online education and digital pedagogy are characterized by the lag of practice from the policy goals set at the national level (KRUMSVIK, 2011; 2014). Due to the dynamic development of ICT need to update teaching strategy and competencies, teachers need systematic professional development (CAENA & REDECKER, 2019; SILVA et al., 2019). Digital competence is becoming a key concept in the context of skills priority (TAMMARO & D'ALESSIO, 2016). Teachers actively use digital tools for pedagogical purposes and therefore there is a need for training and skills renewal, exchange of experience (AMHAG, HELLSTRÖM & STIGMAR, 2019).

These trends in the pedagogical aspects of students' digital competencies development indicate the following basis of the problem: 1) the spread of the pandemic dramatically changes the pedagogical aspects, requiring teachers to absolutely transition to digital communication with students and digital learning; 2) teachers actively use ICT in the educational process and, therefore, need a systematic update of digital skills in order to transfer competence to students. The aim of the research: study of pedagogical aspects of students' digital competence development and the degree of students' encouragement by teachers to develop their own professional digital competence. To achieve this goal, the following tasks are defined:

1. To study the features of the organization of an online course for professional development of teachers.

2. To form recommendations for the development of online course design in universities based on identifying the level of effectiveness of digital teacher training courses.
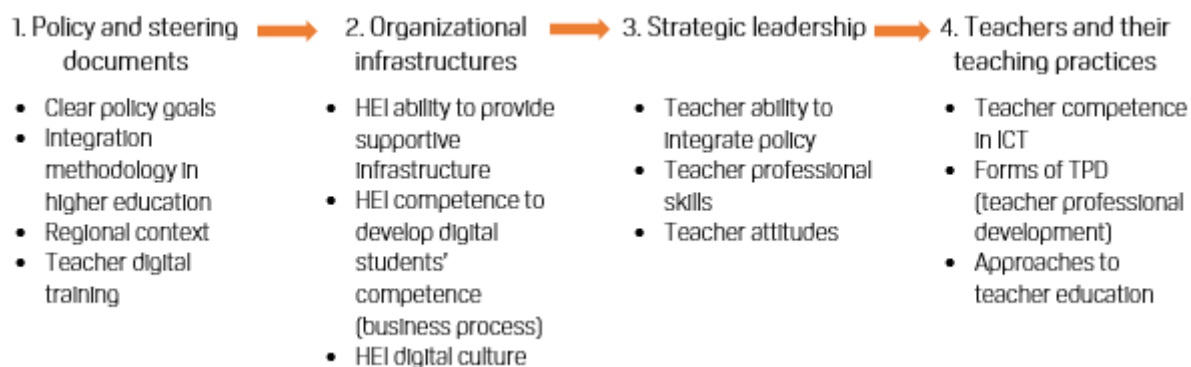
LITERATURE REVIEW

Technological Pedagogical Content Knowledge (TPACK) is a concept of technology-based teaching knowledge whose structure is based on the idea that the integration of technology into the educational context will be effective if the content, potential of technology and pedagogy are reconciled (VOOGT et al., 2013). The literature contains many studies on TPACK, particularly in the context of the role of technology in teacher knowledge (ABBITT, 2011; AKYUZ, 2018). Gudmundsdottir & Hatlevik (2018) argue for the need to check constantly the quality of teacher training programs for digital pedagogy, as teachers note the low quality of training programs for the use of ICT. Napal Fraile, Peñalva-Vélez & Mendióroz Lacambra (2018) consider digital competence as one of the elements of lifelong learning. The study proves students' mastery of ICT skills, digital communication skills and ICT interaction security skills. Instead, students have little mastered the skills of digital data protection, digital content creation (NAPAL FRAILE, PEÑALVA-VÉLEZ & MENDIÓROZ LACAMBRA, 2018). This may be due to the use of a teacher-centered approach, while the new educational paradigm involves the use of a student-centered

approach (PÉREZ & TORELLÓ, 2012). Teachers directly influence the development of students' digital skills in learning by working with digital material (OTTESTAD, KELENTRIĆ & GUÐMUNDSDÓTTIR, 2014). Therefore, educators should focus on students' skills as a key outcome. The new concept of the educational process in higher education causes a change in the professional tasks of the teacher and, as a consequence, a change in the professional profile and pedagogical aspects of the development of digital competencies of students (PÉREZ & TORELLÓ, 2012). Caena & Redecker (2019) define competence as the ability to use their own skills in a problem situation to solve professional problems. A student-centered approach involves the development of such an ability in students, and therefore new pedagogical conditions should be aimed at developing the ability to use ICT in professional activities in the future. Instead, the teacher-centered approach is still widespread in the educational environment, which involves the systematic updating of his digital skills and the transfer of them to students in the learning process.

Pedagogical aspects of digital competence treated as a set of skills and competencies of teachers and students (PETTERSSON, 2018). Pedagogical digital competence is ability to consistently apply attitudes, knowledge and skills in planning, conducting, evaluating and reviewing the learning process using the ICT based on theories, concepts, modern research in digital pedagogy to promote effective student learning (FROM…, 2017). Digital competence of teachers involves (at a fundamental level) the intersection of cognition, perception, metacognition, motor skills, learning strategies, self-efficacy and pedagogical and didactic aspects (KRUMSVIK, 2008). Cazco et al. (2016) identifies the following components of digital competence: social and professional, professional, computer skills, computer educational programs, learning to use information technology. Among the main components of the digital competence development model are basic ICT skills, didactic ICT competences, learning strategies and digital protocol (KRUMSVIK, 2008). Basic ICT skills need to be transparent and understandable to use. Didactic ICT competencies are similar to the knowledge of the pedagogical context and the knowledge of the technological pedagogical context; involve focusing on epistemological ICT and understanding the skills that the teacher must learn. The development of teacher skills goes through the stages of "adoption, adaptation, appropriation and innovation" and often becomes the explicit part of the tacit knowledge, know-how, knowing and awareness acquired throughout the "mental competence journey" (KRUMSVIK, 2008). Learning strategies involve the use of the principles of accessibility and transparency.

The main strategic pedagogical aspects at the first level (Figure 1) include strategic management and national government policy, organizational infrastructure, strategic documents and plans, leadership and pedagogical practice (PETTERSSON, 2018). The development of pedagogical preconditions for the formation of digital competence of students and digital pedagogy begins at the state level with the development of strategies and policies for their implementation, goal setting and integration of methodologies at the regional level (Figure 1).

Figure 1. Pedagogical aspects of digital competence

1. Policy and steering documents	2. Organizational infrastructures	3. Strategic leadership	4. Teachers and their teaching practices
• Clear policy goals • Integration methodology in higher education • Regional context • Teacher digital training	• HEI ability to provide supportive infrastructure • HEI competence to develop digital students' competence (business process) • HEI digital culture	• Teacher ability to integrate policy • Teacher professional skills • Teacher attitudes	• Teacher competence in ICT • Forms of TPD (teacher professional development) • Approaches to teacher education

Source: Based on Pettersson (2018).

For implementation pedagogical prerequisites for the development of digital pedagogy on the second level, it is expedient to assess the state of the organizational infrastructure: digital machinery, equipment, the potential of universities to implement business processes, the digital culture of universities in this area. The third level - strategic leadership: the ability of teachers implement political goals and policies, which depends on their attitudes and perceptions of digital pedagogy and competence, professional skills and ability to develop professional skills. The fourth level - teachers 'practices: competencies in the use of ICT by teachers and available infrastructure, forms of professional development of teachers, teachers' approaches to the development of digital competence of students. At the level of teacher practice, Pöntinen & Räty-Záborszky (2020) formed four

main pedagogical aspects of the development of students' digital competence:

1. Effective solving technical problems that related to learning technical skills and practices. In the course of the educational process, there are unpredictable problems during the acquisition and acquisition of technical skills and practice of using technology. The teacher cannot predict in detail the course of the educational process, but similar problems positively related to the involvement of students in the learning process using digital devices and applications. In such situations, students can develop a variety of critical thinking to solve technical problems in the work of digital devices and take an active part in solving problems.

2. Formation of students' positive feelings about the development of technological skills and practice. Students express positive or neutral feelings rather than negative ones, making efforts to develop technical skills and practice. The main emotional states in a digital environment are excitement, happiness, calm, irritation, sadness or boredom. Positive feelings help to understand better the work with technology, increasing the level of involvement in the process. For example, interest in the work of a particular device, program can cause joy and a higher level of involvement. Intensive work and concrete results, independence in the use of technology increase the level of development of digital skills.

3. The possibility of students using technology in practice. Focusing on solving the problem ensures the achievement of educational goals. For example, focusing on the use of digital technologies in research increases interest in learning, usually requiring the use of analytical skills, synthesis and evaluation of information, with a combination of printed and digital learning materials. Student participation in the creation of different types of digital content also encourages practical activities.

4. Involvement of students in the use of digital technologies for learning, taking into account preferences. In this context, various ways of using digital technologies to teach, document and track one's own learning can be used. This approach can be integrated using a digital portfolio program that promotes collaboration among students and tracks their development of digital competence.

METHODOLOGY

The study is built on quantitative and qualitative methodology and contains an online structured interview of teachers who have taken an online course on developing digital competence skills. This online teacher-training course covers a variety of approaches to the development of pedagogical aspects of digital competence in online teacher training programs. Case study includes the analysis of the online program of preparation of students of Ukraine that gives the chance to study experience of preparation of future experts for distance learning. The case study used a mixed methodological design. The semi-structured survey of students allowed quantitatively and qualitatively analyzing the results of the study and identifying the main features of pedagogical aspects of the development of digital skills of students who are future teachers of the Ukrainian language. The study was conducted by studying the features of an online course for teachers and heads of higher education institutions (MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE, 2021). The course was developed by the Ministry of Education and Science of Ukraine together with the online education studio Educational Era LLC (EdEra) with the support of Switzerland within the Swiss-Ukrainian project DECIDE ("Decentralization for the Development of Democratic Education"), implemented by a consortium of NGOs DOCCU (Civic Competencies Development in Ukraine") and Zurich Pedagogical University (PH Zurich, Switzerland). EdEra LLC is a Ukrainian educational project that creates full-fledged online courses and accompanying materials of a wide profile. An online survey of 132 teachers was conducted in February 2021. The survey included eight items:

1. Demographic variables such as gender, age, commitment to the online course and motivation to take the course.

2. Organization of an online course and attitude to the development of digital competence.

3. Practices of cooperation of teachers in the learning process.

4. Quality and relevance online course.

5. Information and communication of teachers.

6. Digital literacy of teachers, see table 1.

Table 1. Socio-demographic characteristics of survey respondents

Characteristic	Specific weight, %			
Sex	Women's		Men's	
	87.9%		12.1%	
Age	Up to 25 years	25 - 35 years	35 - 45 years	Over 45 years
	6.80%	32,30%	39,50%	21.40%

Source: author's research.

The structured interview was conducted through a survey through electronic means of communication of teachers participating in the course. A total of 132 teachers were interviewed. Teachers from all over Ukraine took part in the survey.

RESULTS

1. Features of organizing an online course for teachers

The online course is a teacher training program and digital skills development in a pandemic. The participants of the course were teachers of different universities of Ukraine. The online course consisted of 2 modules, 8 video lectures, 7 intermediate tests, 2 modular tests, additional materials and a final exam. The course is hosted on the ed-era.com platform. The training was conducted remotely at a convenient time and in a convenient place for students. The online course page contained the following components: 1) course materials; 2) frequently asked questions; 3) certificate; 4) evaluation system; 5) discussion; 6) progress.

The online course involves acquainting teachers with the peculiarities of learning planning with a focus on the student. The purpose of the course is to be acquainted with the organization of two forms of learning: 1) distance learning, when participants are distant from each other, interact with modern digital technologies and blended, which combines distance and full-time learning. Direction: education for teachers. Form of advanced training: remote. Online course volume: 30 hours. The course contributes to the acquisition of new knowledge about distance learning and the use of distance learning technologies in quarantine (Ministry of Education and Science of Ukraine, 2021). The final results of the course are aimed at (MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE, 2021):

- The right choice of services and tools for the development of digital skills of students;
- Organization of group work with the use of distance learning technologies;
- Assessment of knowledge of students and control of activity of each of them;
- Understanding of blended learning models that can be used.

As a result, students (teachers) must have the skills of effective planning of the educational process, teaching strategies, evaluation of learning outcomes, effective online classes in a distance learning environment (MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE, 2021).

2. Attitude to the development of digital competence

A positive attitude is a key factor for the effective use of ICT by a teacher in higher education. During interviews with teachers, different approaches of higher education institutions and understanding of teachers' perception and attitude to digital means and resources in teaching are revealed. The majority teachers (75.6%) have a unique instrumental approach to use digital resources and materials; however, 85.2% indicated the need for training in a pandemic and the widespread use of digital technologies in education (Table 2).

Table 2. Distribution of teachers' answers to questions about the need for professional development in order to develop digital skills

Question	So	No
I have various digital tools (social media, learning platforms, digital materials, etc.)	75,60%	24.40%
There is a need for constant updating of digital skills	85.20%	14.80%
There is a need for online refresher courses	92.10%	7.90%
The online course was useful for developing digital skills	93.78%	6.22%

Source: Author's research.

Thus, teachers are self-motivated to develop digital skills through the mass transition to the use of ICT in the educational process. At the same time, 14.8% of teachers note the lack of need for constant updating of digital skills. This may be due to the high level of mastery of technology and self-learning in the use of ICT. The survey of teachers revealed their subjective technological competence in the use of digital teaching aids. At the same time, teachers are less sure in didactic and theoretical aspects related to digital technologies. There are different views on the role of the teacher in the development of digital competence of students. Some of them talk about the lack of time to think about didactics due to the active use of ICT and the need to adapt to new learning conditions. Among teachers, there is a view that there is no need for special didactics on ICT, as students have the skills to use technology and can use ICT in the learning process. However, the possession of knowledge and skills in the use of ICT does not mean the ability to use technology in practice. This means the importance of the educational context in teacher decision-making on the choice of the purpose of development of digital competences: the choice of acquaintance with ICT, which will be used in training, or the choice of development of the digital skills focused on independent use of ICT by students in professional activity. Therefore, teachers are more likely to use a teacher-centered approach that involves simple ICT operations (Table 3). Instead, in practice, the student-oriented approach is not widespread, which involves the development of skills for students to use technology in problematic situations (29.7% of cases).

Table 3. Distribution of teachers' answers to questions about the use of approaches in the practice of developing students' digital competence

Question	So	No
Practical use of a teacher-centered approach involving simple ICT operations	84.50%	15.50%
Use in practice of a student-centered approach, which involves the development of skills for students to use technology in problem situations	29,70%	70,30%

Source: Author's research.

In the study, scientists found that most educators who have developed online courses have chosen teacher-centered course design. Researchers have concluded that while technological capabilities can easily support a student-centered approach, teachers tend to choose the usual teacher-centered pedagogical solutions when developing online courses. This case study identified similar trends; most teachers supported a teacher-centered approach (84.5%). This means that the learning process is supported by technology, but during the study, students do not have the opportunity to gain skills in the use of technology in future professional activities. During online lectures, teachers show limited technical skills. This can be explained by the difficulty of switching to new communicative pedagogical parameters. Most teachers (92, 1%) acknowledged the need for further training and online courses. Among teachers, 90.15% rated the course as useful for advanced training with a score of 4-5 points (Table 4).

Table 4. Teachers' assessment of the components of the online course training modules

	Number of answers (1 – completely dissatisfied, 5 – absolutely satisfied)				
	1	2	3	4	5
Module 1. Methods of distance and mixed formats of education for students	2	4	7	56	63
1.1 Organization of distance and mixed learning formats	1	2	2	12	14
1.2 Blended learning.	1	1	3	25	29
1.3. Blended learning models	0	1	1	19	20
Module 2. Principles of organization of educational process by distance and mixed forms of education	5	6	12	69	40
2.1 Electronic resources for distance learning	1	2	5	21	17
2.2 Features of assessment and control of knowledge of applicants for professional (vocational) education	2	3	3	18	13
2.3 Features of professional and practical training of skilled workers in the remote form	2	1	4	17	10

Source: Author's research.

The most useful teachers note the materials on blended learning (54 teachers), on models of blended learning (39 teachers), electronic resources for distance learning (38 teachers) and features of assessment and control of students' knowledge (31 teachers). The study identifies unique aspects of teaching specific to digital pedagogy. For example, the teacher's ability to determine attendance at an online class, to support students. One of the teachers of pedagogy explained how to involve students in online dialogue, to become more active in their own learning process. Quality online instructions cannot just be built on in the city curriculum or technological experience; the development of reflection and understanding of online teacher profiles can provide an understanding of the professional development needs of teachers. This aspect became apparent both in the surveys and from other sources of data collected. The initiative in this context was the organization of expert group meetings and interdisciplinary online seminars for teachers. They have been organized since the introduction of the online teacher-training course. However, from the end of 2020, a fixed scheme was introduced, where experienced teachers used the Internet to train new teachers. This initiative was implemented to achieve a systematic exchange of experience and knowledge, especially for teaching in the online educational environment. In the survey, teachers also emphasized the value of teamwork, which ensured the contribution of fellow teachers in pedagogical practice. The online course has become a forum to exchange ideas where teachers were able to share teaching experiences. The transition from offline to online learning is a simple task, but requires some training in the development of technological skills. An online course has become an effective way to prepare for this.

3. Design of online courses

University teachers agree that online teaching provides many different learning opportunities that are not easy to adapt to the pedagogical conditions of teaching at the university. However, in order to be successful, teachers must have a sufficient level of self-confidence. Another important measure of the effectiveness of online learning is sense of teacher achievement ? for the use of ICT and their smooth integration into their own teaching practice, discovering interesting ways to attract students. An important note from previous research in this regard would be that student-centered approaches to teaching are more likely to encourage students to learn more deeply. (KRUMSVIK, 2014). Online courses are an innovative way to rapidly develop teachers' professional digital skills and share experiences in the use of digital resources and tools. For example, among the innovative technologies used by teachers - online resources for presentations Prezi, Canva, technology for learning new material by students "podcast".

4. The importance of practice

In the system of higher education of Ukraine and advanced training of teachers, it is also advisable to implement practical tasks for the development of the teacher's own digital competencies. This experience of the teacher will be able to pass on to the student. In a pandemic, this practice is especially relevant, because traditional digital materials and their processing by students do not significantly affect the development of digital skills. New forms of involving students in teaching in a pandemic can ensure the formation of innovative pedagogical aspects of

teaching. This study demonstrates how an online course can become a platform for sharing experiences between teachers across the country. Higher education institutions have different systems to ensure the quality of this pedagogical practice. Universities develop different teaching strategies, the exchange of which can be useful for teachers. One strategy is an online discussion forum on the university's website, where students can discuss their experiences and share their thoughts. Moreover, various digital tools can help support the monitoring of student practice, assessment and development of professional digital literacy. Such approaches are related to structure and design experiments.

The use of digital portfolios by teachers can be considered an important pedagogical aspect for the development of skills of students who are given the opportunity to receive teachers' support. Digital portfolio in this context is understood as an ICT management system, which involves the use of various digital tools, materials, teaching technologies using electronic media and services to accommodate a set of educational materials. Such an ICT management system can have a positive impact on the formation of students' digital literacy through a comprehensive approach to the use of technology by the teacher and the transfer of digital skills. The digital portfolio approach aims to support students in developing their ability to self-assess, disclose their own digital skills and their relationship to the learning outcomes of the course. Pedagogical and didactic goals related to ICT may be part of the course plan in practice, but not all schools use ICT enough for students to actually practice and learn, and didactic knowledge will be more practical.

DISCUSSION

The Krumsvik (2011) study emphasizes that the development of digital competence, which represents a kind of "Bildung", requires a "journey of competence". Such a journey consists of processes of adaptation, appropriation and innovation. This study found that teachers have adapted to the development of digital competencies, but few teachers use innovative tools to develop students' digital competencies. Moreover, even if some teachers use a student-centered approach, in general, teachers do not influence the development of students' skills in the use of technology in their professional activities. In particular, this situation is due to the impossibility of a pandemic to ensure the formation of such pedagogical aspects, in which the student has the opportunity to use effectively all available ICT in practice. This means that the level of student motivation has decreased, and the level of teacher influence on the development of digital skills is significantly lower in a pandemic. In a study by Voogt et al. (2013) found that students really gained practical experience of using technology in a professional situation by creating a teacher environment where the Sami student solves the problem with the help of ICT including. How to solve such a problem. It is advisable to form groups of students and offline communication within groups with active control of the teacher in the use of ICT by students in a given problem situations of the professional direction.

A study by Krumsvik (2011) found that experiments in modeling and designing online courses by teachers together with students provide a positive impact on digital skills. Students with new online technologies can offer student participation in lesson design in the form of developing presentations. Such technologies can be the development by students of small podcasts (short audio recordings of educational material) or the development of presentations using the online resource Canva. Technology integration does not create systemic changes and transformations in higher education (POLLY ET AL., 2010; AVIDOV-UNGAR & ESHET-ALKALAI, 2011; GRANBERG, 2011), as it is a complex process and requires not only pedagogical prerequisites for teacher readiness, but also technological and managerial transformations. At the same time, policies, strategies at the national level, infrastructure remain unchanged in universities. Teachers' digital skills need to be updated systematically to develop students' digital competencies.

CONCLUSIONS

This study identifies how an online course for educators can improve innovative ways of teaching through ICT. University teachers have demonstrated different beliefs and effectiveness in the use of ICT for pedagogical purposes. In general, teachers seamlessly integrated ICT into the learning process in a pandemic environment, but most were more tool-oriented and supported a teacher-rather than student-centered approach when developing online courses. However, in practice, the integration of technology, teacher skills and understanding of the subject provide the formation of digital competence of students in a pandemic. This study showed that even if online programs for teachers are an effective way to encourage teachers and students to develop digital competence for pedagogical purposes, this aspect is not integrated sufficiently into university programs. Teachers develop their own digital competencies in the process of professional development. Online courses

are an innovative way to rapidly develop teachers' professional digital skills and share experiences in the use of digital resources and tools.

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