The Need for Digital Education in the Teaching Profession: A Path Toward Using the European Digital Competence Framework in Albania

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Abstract

Digital competence is part of 21st Century skills that allow individual teaching professionals to engage in new and flexible ways of learning. Studies have shown that digital competence improves education and equips the teaching staff with expertise on how to use information, communication, and basic problem-solving. The need for digital competence is clearly evident in the current pandemic situation, where digital technologies have taken a more prominent role in communication and education processes. Beyond the digital competence of educators, proper school infrastructure and curricula are needed during pre-service training to help teachers achieve digital competence. To better understand this need, an online survey was developed to analyze digital education in Albania. The survey was designed to analyze the teaching competence of teachers in pre-service and in-service programs, as well as their schools' curricula and infrastructure. Results from the questionnaire highlighted a need for the acquisition of digital knowledge for teachers according to different age groups. The results of the study found that difficulties teachers encountered in the acquisition of digital knowledge were not only due to deficiencies in teacher training but also other issues such as lack of infrastructure. The study concludes by recommending that providing digital education should be in line with European and national policy and legislation, as well as with national and international organizations. The paper reports findings assessing the level of preparedness of Albanian educators in regard to digital education and explores opportunities and identifies challenges for coping with enhancing digital development.

Keywords: Albania, digital competence in education, educational legislation, pre-university education, teachers, teacher survey, students

Society is rapidly digitalizing. Digital devices are used by preschool children and advanced learners to perform a variety of tasks such as playing, communicating, and gathering information. The use and application of digital devices by children has been growing, as well as their access to digital knowledge (Caena & Redecker, 2019; OECD, 2019). The United Nations has accepted that digital technologies have advanced rapidly than any other innovation in the last two decades (United Nations, 2018). Digitalization has led to many technological, economic, social and education changes in society (Gabsalamov et al., 2020; Garzón-Artacho et al., 2021). According to the European Parliament resolution of 2021, digital transformation is shaping the labor market, where as much as 90% of jobs are expected to require some form of digital skills. As a result, advanced digital skills are in high demand.

In order to address digitalization, the European Parliament recommended key competences for lifelong learning. These competences highlight *digital competence* as one of the key competencies necessary. Thus, it is important to focus on education as a tool to equip children, youths and adults with digital skills and literacy. According to several studies, the digitalization of education involves a multifaceted approach which includes replacing traditional teaching approaches with virtual teaching and learning skills. This requires high-quality software in educational institutions, information systems that provide access to educational resources, the introduction of information technologies, online learning and developing learning and evaluating knowledge through digital pedagogy (Strokov, 2020; Anderson & Mattsson, 2020; Yehya, 2021).

In their studies, Pettersson (2020) and Glover et al., (2016) emphasized the importance of intertwining digitalization in pedagogical processes. Teaching methods that do not involve digitalization can fail to transform practice and enhance students' learning. This approach is also supported by the European Digital Competence Framework (2013), which was updated in 2016 (Redecker, 2017). This updated framework provides the mechanisms to understand digital competences. In addition, it offers a variety of initiatives on European, national and regional levels meant to help young people develop digital competence. According to Ferrari (2013), the European Digital Competence Framework is an umbrella for current frameworks, initiatives, curricula and certifications. However, teachers' digital competencies alone are not enough to digitize education. Their competencies need to be accompanied by appropriate education policies, investments, and infrastructure. Digital transformation requires the attention of different layers of society and must be supported by several organizations (Pettersson, 2018; Babaheidari & Svensson, 2014).

Digital competencies in education, and the need for the development of information and communications technology (ICT) in education, are seen as necessities for the development of public education in Albania (Duda & Golubeva, 2013; UNESCO, 2017; European Commission, 2021). Despite steps taken towards the digitalization of the Albanian education system, there is a lack of adequate teacher training and practices to ensure effective online learning. Moreover, the COVID-19 pandemic caught the education system unprepared, with students unable to follow online classes due to unavailability of devices, lack of internet connection or quality support (European Commission, 2021). The inclusion of information technology in the Albanian education system, not just in the curriculum, needs a multifaceted analysis. Such an analysis will evaluate the infrastructure of schools in their location. The analysis would assess the possibility that traditional classrooms are being replaced by smart classes equipped with audio and visual systems, schools are equipped with information systems that provide access to educational resources, teachers have the digital competencies needed to understand their adaptability to digital changes, and financial resources are available. Such an

analysis should be accompanied by the legal framework and the necessary standards compatible with European education systems to enable its implementation by both teachers and students.

This study contributes to a portion of this larger analysis by assessing the digital competencies of teachers, the curriculum in pre-service education and continuous educational training, and the resources of schools in the service of digital education in Albania. An online survey was completed by 365 teachers of different pedagogical profiles employed in different schools located in the city as well as in the countryside. The aim of this study was to assess the need of educators in the area of digital education and to identify approaches toward meeting those needs.

Theoritical Framework

For a teacher to serve the development of society, it is necessary to be equipped with knowledge and skills so they can be transmitted to students. The range of competences epitomized in 21st Century skills include critical thinking, problem solving, creativity, meta-cognition, communication, and digital and technological literacy (American Association of Colleges of Teacher Education, 2010; Dede, 2010; Kim et al., 2019). Such skills must be understood by teachers in order to meet the demands of a global economy. In addition, new ways of learning need to be explored for a society that is becoming increasingly mobile and digital (Council of the European Union, 2018). For example, the European Union requires increasing attention towards improving the level of digital competencies at all stages of education and training, across all segments of the population.

Technical knowledge is an important dimension of digital competence (Monteiro, 2015). Aspects of teaching qualifications and professionalism, including the technical qualities of teachers, were recognized by the 1966 International Labour Organization (ILO) UNESCO recommendation concerning the Status of Teachers as below:

> It should be recognized that advance in education depends largely on the qualifications and ability of the teaching staff in general and on the human, pedagogical and technical qualities of the individual teachers. [p. 79]

This position is also supported by the United Nations (UN) Special Rapporteur on the right to education (UN, 2016), which emphasized the need for governments to take measures to regulate online educators and develop national qualification frameworks and standards to allow learners to receive quality education. According to Monteiro (2015), education system performance has to be seen in the context of other systems in society, for example, health, environmental, legal, governmental, economic and technological. Hereto, the 2030 Agenda for Sustainable Development (UN, 2015; UNESCO, 2018), adopted by the UN General Assembly, emphasizes ICT as a means through which a range of targets will be achieved. These targets include quality education (Goal 4); gender equality (Goal 5); infrastructure (Goal 9); reduced inequalities within and across countries (Goal 10); peace, justice and strong institutions (Goal 16); and partnerships for the goals (Goal 17). Contemporary societies are increasingly based on information and knowledge and the comprehensive presence of technologies (UNESCO, 2018). Teachers need to be equipped to guide the next generation to embrace and achieve these goals. The most complete acquisition of digital knowledge is done from the education system, where teacher competences play a significant role (European Commission, 2013; König et al., 2020; Redecker, 2017).

ICTs and "blended learning" are new paths to learning and require various skills by teachers. Digital competence is crucial in all aspects of the teaching profession such as reflecting, researching, communicating, modelling and teaching (European Commission, 2013; Garzón-Artacho et al., 2021). According to Schola Europaea (2018), digital competence involves the confident, critical and responsive use of, and engagement with, digital technologies for learning, at work, and for participation in society. It includes information and data literacy, communication and collaboration, digital content creation (including programming), safety, (including digital well-being and competences relating to cyber security), and problem-solving. The European Framework for the Digital Competence of Educators (Redecker, 2017) has further conveyed the development of teachers' digital competences, highlighting the need for educators to possess a set of competences. The competences have been divided into educator professional competences, educator pedagogic competences, and learner competences (Redecker, 2017).

However, despite the fact that teacher training is a top priority for digital competencies, it is important to combine professional, pedagogical, technological and organizational capacities to enable these competencies to be realized (Kullaslahti et al., 2019). According to Lorente et al. (2020), a combination of measures make digital education feasible. These measures fall into three categories: (a) basic and computer infrastructure and equipment, as well as Internet access in educational centers to deal with their total or partial closure; (b) the preparation and means of teaching staff to develop teaching-learning models based on distance education; and (c) the measures and resources implemented by countries to provide continuity for educational processes. In addition, educator training has to be accompanied by technological infrastructure, along with software and technical support and maintenance, which require significant financial support from the State (UN, 2016; UN & UNESCO, 2012).

Albania has made some progress promoting a knowledge-based society. This progress is reflected in the introduction of ICT in teacher education and training. Starting from 2012, there was a legislative framework regarding the fundamental competences on education (On Pre-university Education System in the Republic of Albania Law of 2012, Pub. L. No. 69/2012). Digital competence is considered one of the basic competencies of pre-university students. However, this competence does not correspond to the annual distribution of subjects at each level of the pre-university education curriculum. The inclusion of information technology is limited to lower secondary education classes only (Miço et al., 2020). Nevertheless, the application of ICT education systems, starting from pre-school, elementary, high school, university, and professional education is supported by Albania's "Digital Agenda Strategy and Action Plan 2022-2026" (Albanian Council of Ministers, 2022).

As in other countries, Albania lacks legislative regulations for combining technology with improving the teaching process, incentives for teachers to use digital competences, and the pedagogical changes needed to integrate ICT into the teaching process (European Commission, 2013). In addition, school textbooks, teaching materials and the proper infrastructure, particularly in the area of ICT, are integral parts of digital reform (UNESCO, 2017). Hence, digital competencies are necessary for both students and teachers. Studies show that the existing Albanian teacher competence frameworks do not acknowledge digital competences (European Education and Culture Executive Agency, 2019). Even though the use of digital technology has been included in the recent undergraduate curricula at faculties of education, further changes are needed to be implemented in pedagogy to encourage the integration of ICT and multimedia in teaching and learning (Duda & Golubeva, 2013).

Methodology

The researchers employed the survey method to gain insight into the level of digital competence of Albanian teachers and their need to develop competence according to current advancements in technology. As noted in the literature, the survey method is used to collect information from a sample of individuals through their responses to questions (Check & Schutt, 2012). Further still, surveys are important in education research because they can provide quantitative descriptions of the characteristics, behaviors, and attitudes of students, teachers, principals, parents, district leaders, and other specific populations (Walston et al., 2017). The study collected data through a questionnaire designed to measure the level of recognition of digital competence by the staff of the Albanian education system. The questionnaire was administered online using Google Forms. The questionnaire was organized with 18 multiple choice questions. The answers to these questions provided information about the teaching staff's level of knowledge about digital competence. The questionnaire also included open-ended questions designed to identify difficulties encountered during online teaching, as well as the participants' needs for professional development in the field of digital education. The questionnaire was completed by 365 teachers who belonged to the nine-year education cycle and secondary education. Data collection took place during January 2022. The data collected from the questionnaire served to reflect on the legal framework of Albanian education regarding digital competence. They were also used to provide recommendations for changes needed in order for the Albanian education system to embrace digital technology.

Participants and Their Demographics

The questionnaire was completed by 365 Albanian teachers working in pre-university education. Participants were randomly selected from basic and secondary schools. The schools were located both in city and rural areas. According to the demographic data collected through the questionnaire, participants included young and experienced teachers of different genders. The participants held various positions within the schools.

It is important to highlight that the questionnaire was completed by teachers of a special school, who are engaged in teaching children with special needs. Teachers of artistic Lyceum, who are engaged in teaching musical instruments, were included as well. Consequently, the questionnaire was filled out by teachers representing a comprehensive spectrum of Albanian teaching profiles.

The questionnaire was filled-out individually by teachers online, without any possibility of intervention. The questionnaire ensured the preservation of confidentiality and informed participants' that the data of the questionnaire would be valid only for study purposes. In the sections below, questions from the questionnaire are indicated by the abbreviations Q1 for Question 1, Q2 for Question 2, and so forth.

Demographically, the participants varied. With regard to years of experience (Q1), 19.3% of respondents had five years of work experience or fewer, 12.1% had 5 - 10 years, 37.5% had 10-20 years, 8.8% had 20-25 years, and 22.3% had over 25 years of work experience. In terms of gender (Q2), 282 (77.3%) participants were female and 83 (22.7%) were male (Q2). Regarding the location of the participants' educational institutions (Q12), 133 (36.5%) participants reported working in a city, 51 (14%) in the suburbs, and 181 (49.5%) in administrative units and rural areas. Finally, the participants were involved in different subject

areas (Q3), with 241 (69.5%) participants in linguistics and social sciences, 102 (29.3%) the natural sciences, and 4 (1.2%) computer sciences.

Instrumentation

A questionnaire consisting of 18 questions, developed by the research team for this study, was administered to identify teachers' level of knowledge of digital competence. In addition, the questionnaire assessed participants' understanding of the role digital competence plays in the teaching and learning process. There were multiple-choice questions, where participants had the possibility of selecting more than one option and provide comments on the answer in case they were reqiured to interpret their position. The questionnaire was sent to teachers via email invitation. Completing the questionnaire created the possibility for each participant to be identified by email address. Consequently, the data obtained from the questionnaire were individual, identifiable, and non-repetitive.

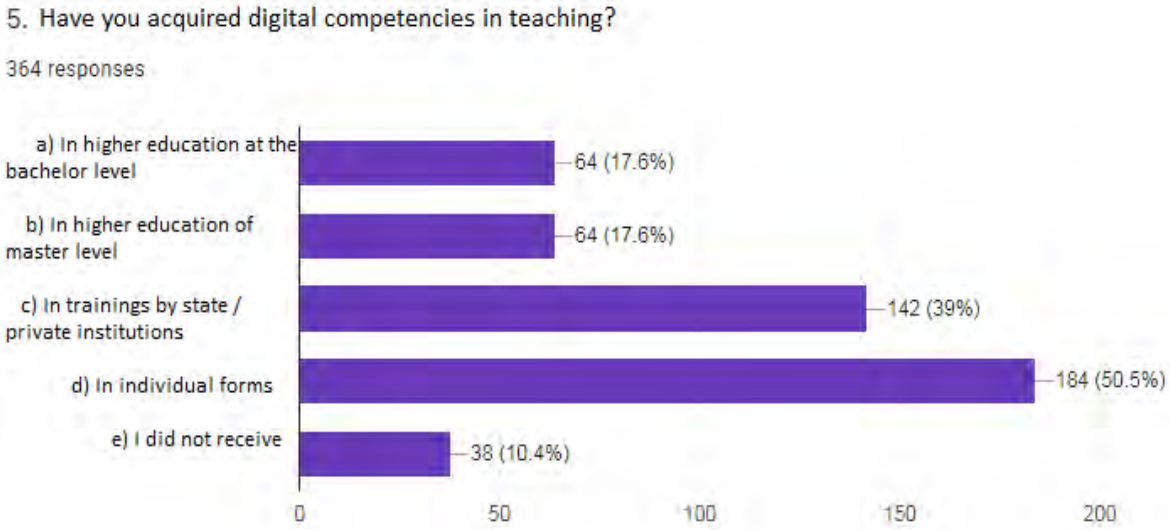
Results

Completion of the questionnaire resulted in quantitative and qualitative data, which helped define the theoretical and explanatory framework of the study. The collected data highlighted the digital knowledge teachers have, which differed according to age group and educational background. The deficiencies encountered served as an indicator of the work needed to complete the digital competencies of teachers in the field of education. At the same time, these data are related to digital competences for teachers according to six separate areas of educators' professional activities. Each question of the questionnaire contained an issue to discuss and analyze in relation to digital education.

Facing an unusual pandemic situation forced teachers to adapt quickly to a new form of technology-based teaching. In the context of this immediate need, there was a lack of in-depth information regarding the acquisition of digital knowledge by the the teachers in Albania's pre-university education system. Hence, the researchers addressed this issue in the questionnaire by asking (Q4), "*Did your university education have a subject on computer knowledge?"*Response to this question varied and 233 (63.8%) participants reported receiving computer knowledge during university training while 132 (36.2%) did not. This is explained by the fact that "computer knowledge" as a course was introduced after the 1990s curriculum. Given that 112 (30.6%) of the participants had more than 20-25 years of work experience (Q1), their lack of computer knowledge may be explained by the lack of this course before 1990. Such an indicator is sufficient to create the possibility that adapting the knowledge of this group of teachers to the new form of online learning process could be difficult and with debatable productive effect.

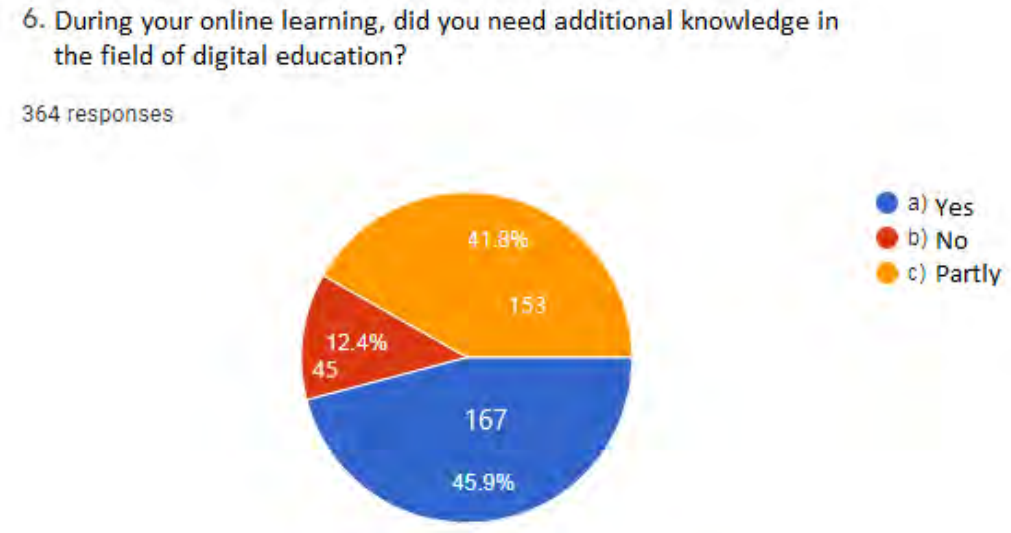
The above result is supported by the Q5: *"Have you acquired digital competencies during teacher training?"* For this question, participants were able to select more than one response. As shown in Figure 1, 64 (17.6%) of participants claimed to have acquired knowledge on digital competence during their Bachelor's program and/or Master programs. One hundred forty-two (39%) of participants stated they developed this competence from trainings received from state or independent institutions. Still another 184 (50.5%) reported they developed digital competence individually and another 28 (10.4%) claimed they had not been able to acquire digital competence. Such indicators expressed the variation in teachers' level of digital competence.

Figure 1
Source of Participants' Digital Competence Education



Another question (Q6) sought to obtain information on the needs of teachers for additional knowledge in the area of digital education. Specifically, the question asked, *"During the learning that you develop/have developed online, did you need additional knowledge in the field of education digital?"* As shown in Figure 2, 45 (12.4%) participants claimed to have *not* needed additional knowledge in the field of digital education. In contrast, 167 (45.9%) participants stated they needed further knowledge and 153 (41.8%) reported needing partial knowledge. When combined, 319 (87.7%) participants reported needing to improve and gain additional knowledge in the field of digital education.

Figure 2
Participants' Need for Additional Digital Education Knowledge



The next quesiton (Q7) asked, "*Do you think that you have consolidated knowledge in the field of technology in order to integrate it in your course?*" Interestingly, 153 (43.8%) of participants stated they had consolidated knowledge of technology which enabled them to integrate it with the subject they tuaght. This is a useful result, given that the cirriculum in Albania's pre-

university education is based on basic competencies. This result indicates the level of technology integration in pre-university education subjects. In comparison, 182 (49.9%) participants claimed to have partial knowledge of technology enabling to infuse it into the subject they teach. Only 23 (6.3%) participants stated they did not have to reinforce knowledge on subject integration with technology.

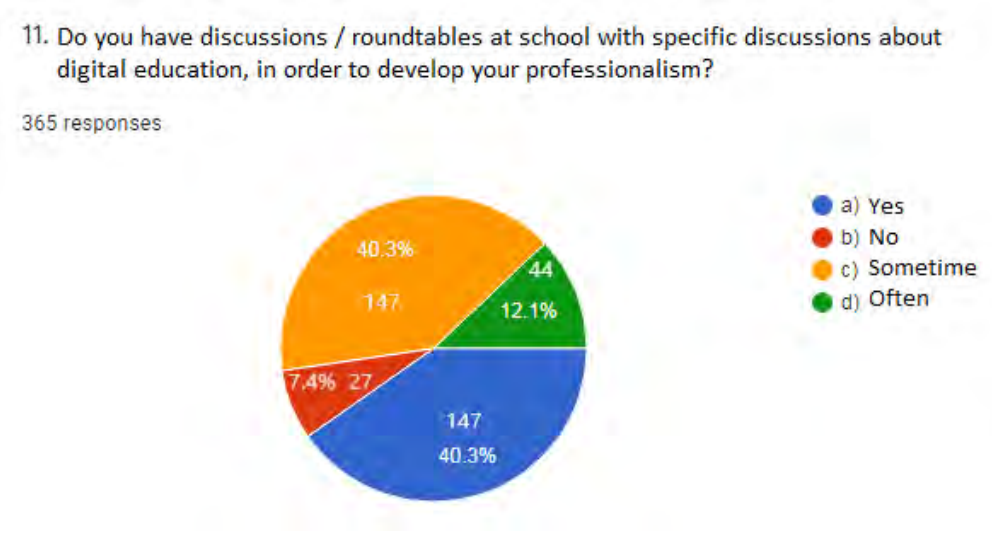
The answers to Q8 provided data on the extent of development of subject competencies during online learning: *"Have you managed to develop each subject competence through the topics covered during online learning?"* Only 136 (37.3%) participants stated they managed to develop every subject competence through the topics covered while teaching online. These data are of particular importance as a positive indicator of the realization of basic competencies through online learning. However, 24 (6.6%) of participants stated they were *not* able to develop subject competencies and 205 (56.2%) claimed to have developed only partial comptencies.

In order to understand how much time technology occupied when teaching in the classroom, Q9 asked: *"Does the application of technology find a place during the current period that learning takes place physically?"* For this question, 182 (50%) of participants answered positively, 37 (10.2%) answered negatively, and 145 (39.8%) answered only partly.

Another question (Q10) aimed to evaluate the impact of teachers' digital competence in increasing their interest towards scientific innovations: *"Has digital competence enabled you to be in coherence with the latest scientific innovations?"* The vast majority of participants (249 or 68.2%) confirmed the impact of digital competence on their interest towards scientific innovations. Another 109 (29.9%) participants responded that it enabled them only in part while only 7 (1.9%) reponded negatively.

The answer to Q11, *"Do you hold discussions / roundtables on specific topics for digital education at school, for the purpose of your professional development?"* provided similar results. As shown in Figure 3, 147 (40.3%) of the participants answered yes and another 147 (40.3%) answered sometimes. On the other hand, 27 (7.4%) participants stated there was a lack of the development of specific topics on digital education and 44 (12.1%) stated these topics were often addressed.

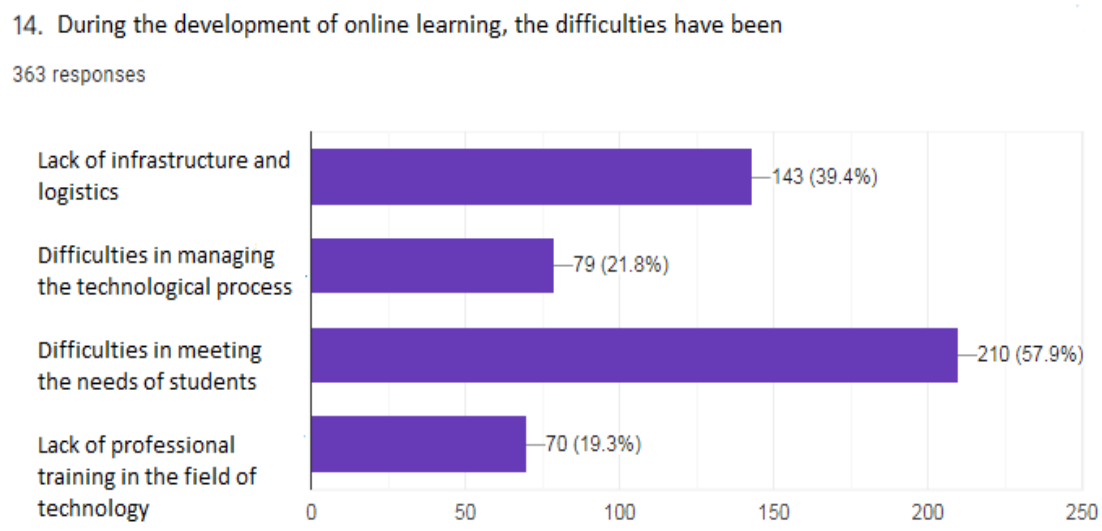
Figure 3
Participants' Discussions on Digital Education



Another question (Q13) asked participants about the readiness of their schools in terms of infrastructure to cope with online learning. This question asked, *"Is your school prepared to cope with online learning in terms of infrastructure?"* In answer, 50 (13.7%) participants confirmed that their schools were in good condition, 221 (60.8%) indicated schools were only partly prepared, and 93 (25.5%) participants stated that their school did not have optimal conditions for coping with online learning.

When asked about *difficulties they encountered in developing online learning* (Q14), 143 (39.4%) participants reported deficiencies in infrastructure and logistics. Another 79 (21.8%) participants reported difficulties managing the technological process, 210 (57.9%) reported difficulty meeting the needs of students, and 70 (19.3%) reported lacking relevant training in the field of technology. Figure 4 shows the type of problems encountered by teachers during online learning and their assessment on the level of difficulty encountered. For this question, the participants had the opportunity to select more than one answer.

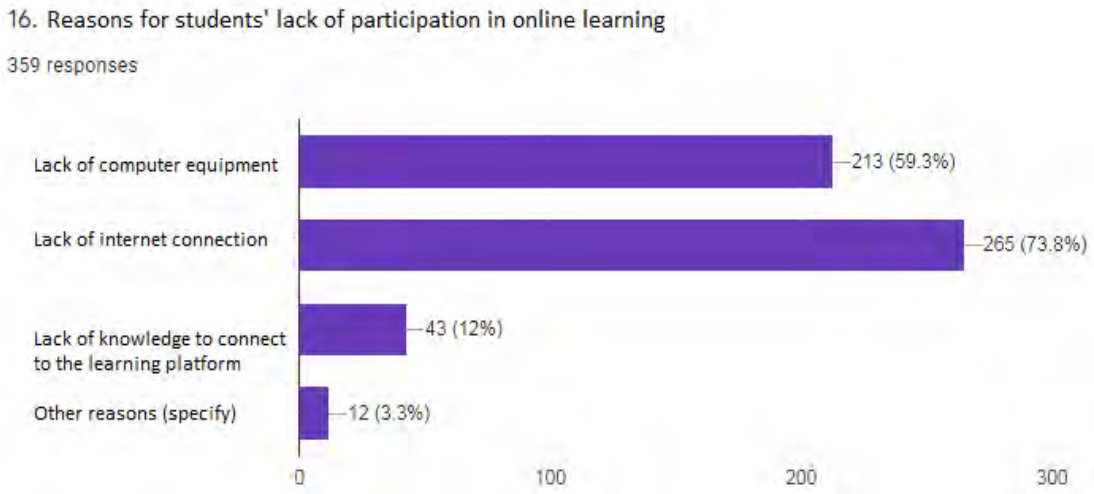
Figure 4
Difficulties Encountered During Online Learning



Another survey question (Q15) asked about *students participation in online learning*. For this question, 81 (22.2%) of the participants reported full participation by students during online learning, another 243 (66.6%) reported that more then half of their class attended, 39 (10.7%) stated that less then half of the class attended, and 2 (0.5%) stated that the students did not attend.

Participants were asked to provide reasons for their answers to the previous question (Q16). As shown in Figure 5, 213 (59.3%) participants mentioned a lack of computer equipment, 265 (73.8%) associated the lack of students' presence to a lack of internet connection, 43 (12%) suggested a lack of student knowledge related to connecting to digital learning platforms, and 12 (3.3%) stated other reasons without further specifying them. For this question, participants had the opportunity to select more than one response.

Figure 5
Reasons for a Lack of Student Participation in Online Teaching



Teachers were also asked about the *alternatives they would consider necessary for improving digital competencies* (Q17). For this question, 15 (4.2%) particpants indicated a need for profound pedagogical changes, 39 (10.8%) suggested reviewing access to curricula and assessment, 17 (4.7%) indicated a need for organizational changes to the school, 138 (38.5%) pointed to a more effective use of school facilities and teaching aids, and 152 (41.8%) indicated all these alternatives were required at once.

In the final question (Q18), particpants were asked to comment on *the difficulties encountered in managing teaching time due to technology management*. In answer, 157 (43.4%) participants acknowledged difficulty managing teaching time. Thirty-two (8.8%) particpants reported not showing problems in time management and 173 (47.8%) stated they had partial difficulties with time management, mostly as a result of inefficient technology management.

Overall, the results of the questionnaire show that teachers may not be prepared for digital competence. Digital knowledge is mostly obtained individually, which means that the level of ability for this individually acquired knowledge is informal and not standardized (Jong & Ferguson-Hessler, 1996).

The majority of teachers felt the immediate need for additional training, as they were insecure in the competencies they possessed. According to Figure 2, the development of digital competence in teachers is presented as an urgent need in order to achieve course integration. It is one of the main elements for the development of teaching and learning process. Failure to perform basic competencies due to a lack of digital skills is a critical issue, which raises questions about the learning provided during the pandemic. Given that a high percentage of participants, as evidenced in Q8, indicated that they managed to only *partly* cover subject competencies, the skills students acquired during the class are concerning if subject competencies were not fully realized.

The discontinuation of online learning and the return to physical classrooms have helped integrate the teaching process with technology application. According to Q10, most teachers claimed that digital competence helped them to be in coherence with the latest scientific knowledge by boosting their professional level. Professional development is a focus of teaching staff, where the topics of digital education are among the most selected, showing a tendency of teaching staff to improve this competence. On the other hand, the use of technology during the teaching process brings difficulties in time management.

Although the questionnaire was completed by teaching staff, 37% of which are part of schools located in the city, only 13% of the participants claimed that their schools had optimal conditions for the development of online learning. More than 80% of participants said that educational institutions did not have the conditions to develop the online learning process, due to inefficient internet connection. The results illustrated in Q13 and Q14 indicated that the greatest difficulties during the development of online learning were encountered in meeting the needs of students and in the deficiencies of school infrastructure and logistics (Figure 4). The answers provided underscore that online learning did not reach a significant number of students, who could not be a part of online class likely due to a lack of infrastructure (Figure 5). To summarize, improving digital competence requires pedagogical change, the revision of the curricula, and the effective use of school facilities and teaching aids.

Discussion

ICT knowledge is one of the core competences of 21st Century Skills needed for students, educators, school reformers, college professors, employers, and others. This competence is applicable to all academic subject areas, and in all educational, career, and civic settings throughout a learner's life. Yet, challenges with adapting education to technology and better-preparing teacher education students is a long-standing issue (Falloon, 2020). To help address this issue, the European Digital Competence Framework aims to describe digital competencies for teachers, focusing on six separate areas of educators' professional activities (Redecker, 2017). These areas are summarized in Table 1.

Table 1
Study Results Corresponding to the Six Areas of Educator Professional Activities

Number	Area Description	Study Findings
Area 1	Professional Engagement. *Using digital technologies for communication, collaboration and professional development.*	320 (87.7%) participants needed to improve and gain additional knowledge in the field of digital education (Figure 2)
Area 2	Digital Resources Sourcing. *Creating and sharing digital resources*	The majority of respondents (60.8%) reported that school infrastructure was only partially prepared to cope with online learning, while 25.5% reported a complete lack of optimal school conditions for digital education (Q13)
Area 3	Teaching and Learning. *Managing and orchestrating the use of digital technologies in teaching and learning*	56.2% of participants claimed that they did not have reinforced knowledge on subject integration with technology, or had only partial knowledge of technology that enabled them to infuse technology into the subject they taught (Q7).
Area 4	Assessment. *Using digital technologies and strategies to enhance assessment.*	210 (57.9%) particpants reported that one of the most frequently encountered difficulties during online learning was meeting the needs of students (Figure 4).
Area 5	Empowering Learners. *Using digital technologies to enhance inclusion, personalization and learners' active engagement.*	Obstacles for the active participation of students during online learning were a lack of computer equipment (59.3%) and poor internet connection (73.8%) [Figure 5].
Area 6	Facilitating Learners' Digital Competence. *Enabling learners to creatively and responsibly use digital technologies for information, communication, content creation, wellbeing and problem-solving*	The teachers emphasized the need to acquire additional knowledge in the following areas: pedagogical changes, revision of curricula and assessment, organizational changes of the school, and the effective use of school facilities and teaching aids (Q17).

The areas of professional skills mentioned in the European Digital Competence Framework are related to Albania's legal framework for education. However, although documents such as: "Professional standards of teachers," "Competency-based curricular framework" or "Law on pre-university education in the Republic of Albania" are outlined, it seems that the sustainable development of digital competencies is a continuous effort to get closer to the standards of the regional and European countries. The development of digital competence for educational staff in Albania requires an integration of technology training with teacher preparation programs (Sutton, 2011).

The first area, which is related to professional development, describes the use of digital technologies for communication and collaboration with colleagues, students, parents and others. In addition, it emphasizes the importance of teachers' reflection, individually and collectively, on their teaching practices, as well as critically evaluating the effectiveness and appropriateness of their digital teaching strategies by actively developing them (Caena & Redecker, 2019). The data obtained from this study identified shortcomings in the professional engagement of teachers in order to meet the indicator of Digital Competence of Educators (DigCompEdu). The need of teachers for additional digital competences and knowledge on digital education, particularly during online learning, shows that the motivation to improve digital competencies may come as a personal request of the teacher rather than as encouragement from educational institutions.

The second area focuses on the selection and management of digital resources in education, including knowledge on the protection and security of data disseminated in digital resources. The Albanian legal framework does not allow educational institutions to choose or manage digital platforms. Educational institutions do not have the right level of financal and managerial autonomy in order to be accountable for this aspect. Since educational institutions in Albania are not considered budgeted units in financial policies, they do not have separate budgets, and, consequently, every educational institution is administratively dependent on local and central government (On Pre-university Education System in the Republic of Albania Law of 2012, Pub. L. No. 69/2012; European Commission, 2018).

Data collected for this study found that participants reported their schools were not in optimal condition for the development of online learning. This was due to lack of infrastructure and logistics. According to the report of the United Nations Rapporteur on the right to education, technological infrastructure, along with software, technical support, teacher training and maintenance requires significant support from the state (UN, 2016).

Meanwhile, digital resources that make the right to education accessible do not find themselves sufficiently in the Albanian legal provisions in force. The legal framework that includes ICT in pre-university education is incomplete. Moreover, the strategy for pre-university education has found the use of ICT in educational institutions limited, as well as equipment that serves this purpose, to be obsolete in most cases (Albanian Council of Ministers, 2016). According to the UNESCO analysis of education policies in Albania, many of the 15,731 computers and 1,631 laptops in pre-university schools are not functional. Laboratory computers, in addition to being connected to the Internet, are not equipped with curricula or subject-related content applications (UNESCO, 2017).

The third area focuses on the management and use of technology in the learning process. Technology can improve and develop teaching and learning strategies in a variety of ways (Redecker, 2017). The questionnaire data showed that more than half of the participants had difficulty integrating technology with the content of the curricula, casting doubt on the effectiveness of teaching and learning strategies using technology. The assertion that the lack of knowledge in technology impacts teachers' management lessons, causing difficulties, is another indication that the development of the teaching process through technology takes considerable time to be realized and adapted. The comparison of the survey data used in this study with the information collected from the Online Learning Survey 2 conducted by the Agency for Quality Assurance in Pre-University Education shows a deep discrepancy in the level of digital competence of teachers. The state survey found that 98% of teachers nationwide were effective in linking subject topics to online teaching. In contrast, the data from this study

revealed that 87.7% of participants needed to *improve* and *gain additional knowledge* in the field of digital education.

The fourth area is related to assessment and addresses the concrete use of technology for assessing learning needs (Caena & Redecker, 2019). Although the information received from teachers belongs to a period when online teaching is no longer taking place, teachers admitted that one of the main difficulties they encountered during online teaching was related to the shortcomings in meeting student needs. Throughout the curriculum and its breakdown into textbooks, digital education poses a fundamental challenge to the education system. Moreover, digital competence is one of the basic competencies to be integrated in the new Albanian curricular framework. Currently, the first steps have been taken through the introduction of digital textbooks in the pre-university educational institutions of secondary education that have tablet laboratories for the integration of e-learning platforms (Albanian Ministry of Education and Sports, 2016). However, the adaptation of the right to education in Albania with the development of digital competences and the effective use of ICT in school requires not only the drafting and strengthening of the legal framework in force in pre-university education, but above all, investments by the state to meet the needs for the comprehensive deployment of ICT, both in infrastructure, technology, curricula and textbooks, as well as in training and qualification of the teaching staff.

The fifth area emphasizes the importance of creating learning activities and experiences that address student needs and allows them to actively develop their learning process by helping to improve digital competence (Caena & Redecker, 2019). Teacher statements in the survey emphasized the lack of affecting all students during the development of online learning due to limited computer equipment and poor internet connections.

The sixth area relates to teachers' efforts to facilitate their students' digital competence, enabling them to manage risks and use digital technologies safely and responsibly (Caena & Redecker, 2019). This aspect is related to digital education that teachers should possess at satisfactory levels. In this study, particpants expressed having an immediate need to obtain additional knowledge in the field of digital education.

Recommendations

Preparing teachers with digital knowledge requires a great commitment from all faculties that offer teaching programs in education. It also requires multidisciplinary coordination with support from state policies in the field of education. The inclusion of digital knowledge in higher education curricula requires the same legal support as pedagogy and psychology courses pursued in teaching programs. The necessity of having digital knowledge for teacher training needs to be emphasized. Moreover, it requires broad-based support from all faculties of education that will engage in the preparation of the relevant courses. This knowledge obtained in the faculties of education should be reinforced through continuous teacher training, keeping teachers up-to-date with changes in digital knowledge (Falloon, 2020).

The knowledge acquired by teachers must be supported by well-organized digital systems, which require investment by the state in hardware and software infrastructure. Investing in infrastructure in education firstly requires the drafting of a real strategy. This will involve making a map of the education system and understanding the relevant investments needed in each level and school. Secondly, the investment in the school infrastructure should be accompanied by the provision of a good digital network, extending throughout Albania.

Moreover, the construction of suitable software for pre-university education schools is important as it will be used to distribute each school's information regarding student personal information, assessments, relevant school subjects, the curriculum of each subject, tests, and the work of students in each subject, as well as the coordination with parents or guardians for students' learning progress. Thirdly, investment in school infrastructure is also related to equipping schools with computers, smartboards, and other digital devices to facilitate the teaching process. These changes will help make the teaching process intertwined with digital technology to collect and transmit information in real-time.

The construction of the digital infrastructure will also ensure the integration of technology in school curricula, interweaving the knowledge of the subject with the communication and distribution of information to facilitate the teaching process. Teachers must be trained to use digital software/programs and to use this knowledge in the content and development of the subjects they teach.

The digital platforms built and implemented in schools will also be used for assessing learning needs as well as for measuring students' digital competence. Students today must acquire digital competence. This will impact teaching and evaluation in order to find ways to improve this competence. Additionally, the digital platforms should have an all-inclusive approach, enabling all users to use it, thus promoting inclusion, individual engagement, and student involvement.

For this policy to continue, it is necessary for the establishment of a national training network focusing on the development of teachers' digital competence. This network will support implementing the curriculum. The national training network can be developed and supported by higher education institutions as a continuous qualification after initial training. This will help build a decentralized approach from central institutions for professional development. Following these steps will serve to implement the European Digital Competence Framework in equipping teachers with digital competencies.

Conclusion

The need to address digital competencies has become evident not only from international analysis in the Albanian education sector, but was also clearly identified during the COVID-19 pandemic. For a variety of reasons, Albanian educators encountered difficulties with online teaching. This study indicates a need to strengthen digital competency in education in terms of teaching competence, pre-service teaching programs, in-service training, curricula, and infrastructure. The goal is a holistic approach towards a functional, productive and effective educational system that exists within an increasingly digital society. The study highlighted the fact that the digital competence of teachers is interconnected with the digitalization of the whole education system, and it is embedded in all aspects of the teaching profession including reflecting, researching, communicating, modelling and teaching. Given that the Albanian education system continues to be centralized both politically and financially, the need for investment in digital education must be met by the government in parallel with curricular changes in pre-service and in-service training. To facilitate this, mechanisms should be built not only to promote and improve teachers' knowledge in digital competence, but to introduce ways of incorporating digital applications, platforms and programs that support everyday knowledge creation and distribution. The results of this study further reveal the need to adopt the European Framework, to include it into educational policy and legislation, and to break it down into concrete areas of the teaching profession. The results of this study can provide a

focal point for policy reflection on the part of the state, with the goal of increasing investment in education to facilitate the digitalization of the system.

In addition, this study may increase awareness among faculties and universities that offer pre-service teaching programs to enable different courses with a focus on improving digital competence of graduating teachers about to enter future classrooms. Finally, the study seeks to provide a voice for governmental institutions developing educational policies in Albania to provide ongoing training for teachers in the field of digital competencies.

References

Albanian Ministry of Education and Sports. (2016, May 30). "*On the procedures of competition, approval, ordering, distribution and sale of digital textbooks in educational institutions of the pre-university education system that have laboratories with tablets for the integration of e-learning platform*", Ministry of Education and Sports, Instruction no. 9, dated 30.05.2016. Official Gazette no. 113, year 2016. https://arsimi.gov.al/tekstet-mesimore/

Albanian Council of Ministers. (2022, June 01). "On the approval of the intersectoral strategy "Digital Agenda of Albania" and action plan 2022-2026". Decision no. 370, dated 01.06.2022, of the Council of Ministers. https://akshi.gov.al/wp-content/uploads/2022/06/vendim-2022-06-01-370.pdf

Albanian Council of Ministers. (2016, January 11). "*On the approval of the strategy for the development of pre-university education for the period 2014-2020*". Decision no. 11, dated 11.01.2016 of the Council of Ministers. https://arsimi.gov.al/strategjia-e-zhvillimit-te-arsimit-parauniversitar-2014-2020

Albanian Quality Assurance Agency in Pre-university Education. (2020). *Sondazh i mësimit online 2. Perceptime te nxënësve, prindërve dhe mësuesve.* https://arsimi.gov.al/wp-content/uploads/2020/04/1586552308063_Sondazhi-i-m%C3%ABsimit-online-2.pdf

American Association of Colleges of Teacher Education, Partnership for 21st Century Skills. (2010). *21st Century Knowledge and Skills in Educator Preparation*. Retrieved from https://files.eric.ed.gov/fulltext/ED519336.pdf

Anderson, P., & Mattsson, L. (2020). Future digitalization of education after COVID-19. In M. Carlsson-Wall, G. Lindqvist, & S. Rosengren, A. Werr, & F. Wijkström (Eds.), *Sweden through the crisis.* Stockholm School of Economics Institute for Research.

Babaheidari, S., & Svensson, L. (2014). *Managing the Digitalization of Schools: an exploratory study of school principals' and IT managers' perceptions about ICT adoption and usefulness.* Conference Paper E-Learn 2014 - New Orleans, LA, United States, October 27-30, 2014. https://doi.org/10.13140/2.1.4707.8083. Retrieved from https://www.learntechlib.org/primary/p/148768/

Brewer, E. (2009). *Conduction survey research in education.* Handbook of Research on E-Learning Applications for Career and Technical Education: Technologies for Vocational Training. https://doi.org/10.4018/978-1-60566-739-3.ch041.

Caena, F., & Redecker, C. (2019). Aligning teacher competence frameworks to 21st century challenges: The case for the European Digital Competence Framework for Educators (Digcompedu). *European Journal of Education*. Wiley. No. 54. 356–369. https://doi.org/10.1111/ejed.12345.

Check, J., & Schutt, R. K. (2012). *Research methods in education*. Thousand Oaks, CA: Sage. DOI: https://dx.doi.org/10.4135/9781544307725

Council of the European Union. (2018). *Recommendation of 22 May 2018 On key competences for lifelong learning (2018/C 189/01)*. Official Journal of the European Union. C 189/1. 04.06.2018. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&rid=7

Dede, C. (2010). Comparing frameworks for 21st century skills. In J. Bellance, & R. Brandt (Eds.), *21st century skills: Rethinking how students learn* (pp. 51–76). Bloomington, IN: Solution Tree Press.

Duda, A., & Golubeva, M. (2013). *Teacher education and training in the Western Balkans: report on: Albania.* European Commission, Directorate-General for Education, Youth, Sport and Culture. Skikos, H.(editor), Publications Office, 2013. https://data.europa.eu/doi/10.2766/62639

European Commission. (2021). *Albania 2021 Report.* Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 2021 Communication on EU Enlargement Policy. Strasbourg 19.10.2021 Retrieved from https://ec.europa.eu/neighbourhood-enlargement/albania-report-2021_en

European Commission. (2013). *Supporting Teacher Competence Development for Better Learning Outcomes*. Brussels: European Commission Education and Training UE. Retrieved from https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SWD:2012:0374:FIN:EN:PDF

European Parliament, & Council of European Union. (2006). *On Key competences for lifelong learning.* Recommendation 2006/962/EC. Official Journal of the European Union L 394/10 30.12.2006. Retrieved from https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:394:0010:0018:en:PDF

European Parliament resolution. (2021). *On shaping digital education policy. 2020/2135(INI).* Retrieved from https://www.europarl.europa.eu/doceo/document/TA-9-2021-0095_EN.html

European Commission. (2019). *Eurydice Report, Digital Education at School in Europe.* Luxembourg, Publications Office of the European Union. Retrieved from https://eacea.ec.europa.eu/national-policies/eurydice/content/digital-education-school-europe_en

European Education and Culture Executive Agency, Eurydice. (2019). *Digital education at school in Europe*. Publications Office, 2019. https://data.europa.eu/doi/10.2797/763

European Commission. (2018). *Commission Staff Working Document, Albania 2018 Report*. Strasbourg, 17.04.2018, p. 49. https://ec.europa.eu/neighbourhood-enlargement/system/files/2020-10/20180417-albania-report.pdf

Falloon, G. (2020). *From digital literacy to digital competence: the teacher digital competency (TDC) framework.* Educational Technology Research and Development 68, 2449-2472. https://doi.org/10.1007/s11423-020-09767-4

Ferrari, A. (2013). Report of the European Commission. *DIGCOMP: A Framework for Developing and Understanding Digital Competence in Europe.* Luxemburg. Publications Office of the European Union. https://op.europa.eu/en/publication-detail/-/publication/a410aad4-10bf-4d25-8c5a-8646fe4101f1/language-en

Gabsalamov, A., Akhmetshin, E., Bochkareva, T., Vasilev, V. (2020). "Digital Era": Impact on the Economy and the Education System (Country Analysis). *Utopía y Praxis Latinoamericana, 25*(10), 170–186. https://doi.org/10.5281/zenodo.4155437

Garzon-Artacho, E., Sola-Martínez, T., Romero-Rodríguez, J., Gomez-García, G. (2021). Teachers' perceptions of digital competence at the lifelong learning stage. *Heliyon* 7, 2021, e07513. https://doi.org/10.1016/j.heliyon.2021.e07513

Glover, I., Hepplestone, S., Parkin, H., Rodger, H., Irwin, B. (2016). Pedagogy first: Realizing technology enhanced learning by focusing on teaching practice. *British Journal of Educational Technology*, 47(5), 993–1002. https://doi.org/10.1111/bjet.12425

ILO & UNESCO. (2016). *The ILO/UNESCO Recommendation concerning the Status of Teachers (1966) and the UNESCO Recommendation concerning the Status of Higher-Education Teaching Personnel (1997) –* Revised edition 2016, International Labour Office, Sectoral Policies Department, Geneva, ILO, 2016. ISBN: 978-92-2-131311-3 (print) Retrieved http://portal.unesco.org/en/ev.php-URL_ID=13084andURL_DO=DO_TOPICandURL_SECTION=201.html

Jong, T., & Ferguson-Hessler, M. (1996). Types and qualities of knowledge. *Educational Psychologist*, 31(2), 105–113. http://search.epnet.com/login.aspx?direct=true&db=pbh&an=9612021864

Kim, Sh., Riza, M., Seidman, E. (2019). Improving 21st-century teaching skills: The key to effective 21st Century learner. *Comparative & International Education*, *14*(1) 99–117. https://doi.org/10.1177/1745499919829214.

König, J., Biela, D., Glutsch, N. (2020). *Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany.* European Journal of Teacher Education, *43*(4), 608–622, https://doi.org/10.1080/02619768.2020.1809650.

Kullaslahti, J., Ruhalahti, S., & Brauerm, S. (2019). Professional Development of Digital Competences: Standardised Frameworks Supporting Evolving Digital Badging Practices. *Journal of Siberian Federal University. Humanities & Social Sciences*, *12*(2), 175–186. https://doi.org/10.17516/1997-1370-0387

Lorente, L., Arrabal, A., & Pulido-Montes, C. (2020). The Right to Education and ICT during COVID-19: An International Perspective. *Sustainability 2020*, 12, 9091; https://doi.org/.3390/su12219091.

Miço, H. (2019). *"An overview of the right to education in Albania. The performance of this right in accordance to European legislation.*" (Unpublished Doctoral Dissertation). Institute of European Studies, University of Tirana. Albania. Retrieved from http://www.doktoratura.unitir.edu.al/2020/01/nje-veshtrim-i-pergjithshem-mbi-te-drejten-per-arsim-ne-shqiperi-ecuria-e-kesaj-te-drejte-ne-perputhje-me-standardet-nderkombetare-dhe-legjislacionin-evropian/

Miço, H., & Zaçellari, M. (2020). "Online learning as a means toward achieving an adaptable right to education in Albania". *Knowledge-International Journal*, 2020, 42(2) 293–298. ISSN online 2545-4439 https://ikm.mk/ojs/index.php/KIJ/article/view/4672/4459

Monteiro, A. (2015). *The teaching profession present and future*. Springer. ISSN 2211-193X (electronic). https://doi.org/10.1007/978-3-319-12130-7.

On Pre-University Education System in the Republic of Albania, Pub. L. No. 69/2012, 21.06.2012. https://arsimi.gov.al/wp-content/uploads/2019/02/Permbledhje-parauniversitari-8-Tetor-2020.pdf

OECD. (2019). *Impacts of technology use on children: Exploring literature on the brain, cognition and well-being.* Education Working Paper No. 195. EDU/WKP (2019)3. Retrieved from https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=EDU/WKP%282019%293&docLanguage=En

Pettersson, F. (2018). Digitally Competent School Organizations – Developing Supportive Organizational Infrastructures. *International Journal of Media, Technology & Lifelong Learning*, *14*(2), 132–143. https://www.diva-portal.org/smash/get/diva2:1260178/FULLTEXT02.

Pettersson, F. (2020). Understanding digitalization and educational change in school by means of activity theory and the levels of learning concept. *Education and Information Technologies* (2021) 26:187–204. https://doi.org/10.1007/s10639-020-10239-8

Redecker, C. (2017). *European Framework for the Digital Competence of Educators: DigCompEdu*. Punie, Y. (ed). EUR 28775 EN. Publications Office of the European Union, Luxembourg, 2017, ISBN 978-92-79-73494-6. http://dx.doi.org/10.2760/159770

Schola Europaea. (2018). *Key Competences for Lifelong Learning in the European Schools.* Ref.: 2018-09-D-69-en-1. Retrieved from https://europeanschooluxembourg2.eu/wp-content/uploads/Key-Competences-for-Lifelong-Learning-in-the-European-Schools.pdf

Sutton, S. (2011). The preservice technology training experiences of novice teachers. *Journal of Digital Learning in Teacher Education*, *28*(1), 39–47. https://doi.org/10.1080/21532974.2011.10784678

UNESCO. (2017). *Albania. Educationa policy review; Issues and Recommendations*. Paris, April 2017, p. 24. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000247993

UNESCO. (2018). *UNESCO ICT Competency Framework for Teachers.* Published in 2018 by the United Nations Educational, Scientific and Cultural Organization, 7, place de Fontenoy, 75352 Paris 07 SP, France. ISBN 978-92-3-100285-4.

United Nations. (2018). The 2030 Agenda and the Sustainable Development Goals: An opportunity for Latin America and the Caribbean (LC/G. 2681-P/Rev. 3), Santiago, 2018. https://repositorio.cepal.org/bitstream/handle/11362/40156/S1801140_en.pdf?sequence=25&isAllowed=y

United Nations. (2016). *Report of the Special Rapporteur on the right to education.* A/71/358. 29 August 2016. Retrieved from https://www.right-to-education.org/sites/right-to-education.org/files/resource-attachments/UNSR_RTE_Report_Lifelong_Learning_2016_En.pdf

United Nations. (2015). *Transforming our world. The 2030 Agenda for Sustainable Development* A/RES/70/1. Retrieved from https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf

United Nations. (2016). *Report of the Special Rapporteur on the right to education.* A/HRC/32/37. 6 April 2016. Retrieved from https://undocs.org/A/HRC/32/37

UN., & UNESCO. (2012). *ICT in Primary Education Analytical Survey*. Volume 1 Exploring the origins, settings and initiatives. Retrieved from https://iite.unesco.org/pics/publications/en/files/3214735.pdf

Walston, J., Redford, J., Bhatt, M. (2017). *Workshop on Survey Methods in Education Research: Facilitator's guide and resources* (REL 2017–214). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Midwest. Retrieved from http://ies.ed.gov/ncee/edlabs

Yehya, F. M. (2021). Promising Digital Schools: An Essential Need for an Educational Revolution. *Pedagogical Research, 6*(3), em0099. https://doi.org/10.29333/pr/11061

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