REPORT ON TRAINING NEED ASSESSMENT OF TEACHERS OF PRIMARY AND BASIC EDUCATION IN IT AND DIGITAL LITERACY

ANALYTICAL REPORT
2022

This report is prepared under "EU4Schools" Programme, funded by European Union and implemented by UNDP in collaboration with Albanian Government, aiming to address some of the challenges in IT and digital literacy for teachers of primary and basic education, and assess their training needs on this field.

Opinions and views expressed in this report do not necessarily reflect those of the United Nations Development Programme (UNDP) or the European Union.

This report is prepared by a team of researchers of Akademi.al including Dr. Migena Kapllanaj, Mr. Bernard Zeneli, Ms. Irena Matraku, Mr. Franci Erebara and Dr. Edvin Lame, in close collaboration with Programme team.

Mr. Dean Çelaj, executive director of Akademi.al oversaw and facilitated the research and writing processes.

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Acronyms

.csv – comma separated values

ANOVA – Analysis of Variance

ASCAP – Quality Assurance Agency for Pre-University Education

EU – European Union

GoA – Government of Albania

INSTAT – Institute of Statistics of Albania

IT – Information Technology

MesoVET – teaching and learning platform for Vocational Education in Albania

MoES – Ministry of Education and Sports

MS – Microsoft

NAIS – National Agency for Information Society

NI – non identifiable

pdf – portable document format

SMIP – System of Managing Pre-University Information

SPSS - Statistical Package for Social Sciences

UNDP – United Nations Development Programme

VET – Vocational Education and Training

Executive Summary

This study was developed in 43 schools of primary and basic education, that are part of the "EU4Schools" Programme, funded by European Union and implemented by UNDP in collaboration with the Government of Albania. The programme itself target 63 education facilities, including creche, kindergarten, 9-years schools, high schools, professional schools and dormitories, in eleven municipalities affected by the earthquake of November 26, 2019, namely: Kruja, Durrës, Kurbin, Kamza, Kavaja, Tirana, Mirdita, Lezha, Rrogozhina, Shijak, Vora in the area of education. The overall objective is to further support local and national governments in reducing social and economic losses, and to accelerate the recovery process through educational facility repairs and reconstruction.

The study report provides the methodology, processes, procedures, and methods which were used to test teachers' digital competencies, collection of the data; and describe the key questions which were asked to the participants' part of the study, as well as evaluation strategies of the information gathered in order to assess the training needs of teachers of primary and basic education in IT and digital literacy.

The total number of teachers involved in this study is 785 in 43 education facilities.

To test teachers' digital competencies in a thorough way we have used the instrument prepared from Redecker's (2017) DigCompEdu. The questionnaire is divided into 2 parts. The first part is the DigiCompEdu instrument, and a second part is a group of demographic and other characteristics of the participants. This questionnaire underwent a pilot phase and after possible corrections, the final form was distributed within the Akademi.al platform with Google Form. The collected data has identified the level of digital competencies for all teachers and could be compared between the groups of teachers based on their gender, age, type of school, type of teaching subject, years of experience, etc. The data has been analysed with SPSS (Statistical Package for Social Sciences), then they are described in narrative form.

The results of this study showed that the majority of respondents were women (¾ of the sample). Most teachers that participated in the survey are in the age group 30 - 39 years old and this counts for 37% of the participants. Together with the age group 25 - 29 years old and 40 - 49 years old they account for 75% of the survey participants. Of these, only 20% have not used digital technology. But, 44% of the teachers claimed to be members of social networks and this fact can be used to promote digital teaching and learning. At the same percentage level are the teachers who use the internet extensively and competently and even higher is the percentage of teachers (57%) who are willing to try new applications, programs, and resources. But, despite the young age of teachers, 65% of the sample admitted that they do not use technology in their subjects, even though the teaching curriculum allows the integration of technology in the teaching process.

These results make very imperative and evident the need for training to initiate digital competencies of teachers and further develop them in those schools and among those teachers where these competencies exist. The contradictory responses are indicative of the needs that teachers must understand better the concepts and usage of digital technologies for teaching purposes. Training module dealing with the basic concepts of digital technologies in use during the teaching process combined with the selection of the most effective digital methods of digital communication would help teachers realize better the digital aspects of teaching and communication.

Based on these results, referring to studies on Albanian culture where women are more in charge of the family and personal life responsibilities compared to men, and most teachers are women, it is recommended to review the curriculum in terms of the level of load of the teaching modules. Also, referring to the age group of teachers, new teachers must be trained to provide help and assistance to teachers who have never had experience in digital programs. Lack of experience poses a challenge when addressing the needs of teachers towards digital education and the introduction of digital teaching methods. The experience gained during the pandemic lockdown when teaching was realized either remotely or digitally should be taken into consideration and factored in when preparing training modules for the more experienced teachers.

Training modules should focus also on elementary school teachers, as they are the basis of teaching and have the highest level of students. Also, for teachers who have never used digital technology, training with introductory modules is recommended.

The area of teaching and learning will be the most challenging for the training which should initiate a culture shift regarding hybrid methods of teaching and learning as well as promotion of monitored autonomous learning. The training modules should make it clear that video watching is not a purely digital resource but making a video to illustrate a notion or theory using digital devices, including cell phones, and posting them online for review is. For this reason, they must be equipped with the necessary knowledge and competencies to use technology properly, to strengthen personal competencies and those of students. Also, training in the field of technology is necessary for students, as they will encourage independent learning and transfer technological knowledge to develop new situations.

Programme background

"EU4Schools" is a Programme funded by the European Union in response to the recovery process following the earthquake of November 26, 2019. The Programme is being implemented by the UNDP, in cooperation with the Albanian Government. It aims to support Albanian citizens in eleven affected municipalities, namely: Kruja, Durrës, Kurbin, Kamza, Kavaja, Tirana, Mirdita, Lezha, Rrogozhina, Shijak, Vora in the area of education. The Programme is part of the European Union's financial commitment during the International Donor's Conference, organized in Brussels on February 17, 2020. The overall objective of this action is to further support local and national governments in reducing social and economic losses, and to accelerate the recovery process through educational facility repairs and reconstruction.

The disruption from the earthquake of November 26th, 2019, left many education facilities in different municipalities in Albania in desperate need of support to accelerate the recovery process with repairments and reconstructions of the education facilities, in order to enable gradual normalization of life of the affected population and ensure students lose minimum school and learning days.

Furthermore, COVID-19 brought another educational crisis, with most of the educational facilities in the country were shut down and were left to deliver learning through online tools. Albania's education system struggled to withstand the extended shutdowns like the one imposed by the COVID-19 pandemic. "EU4Schools" is aiding the recovery process and is set to repair or reconstruct more than 60 educational facilities including crèches, pre-schools, primary education, secondary schools - including VET schools and respective dormitories in the municipalities affected by the earthquake.

Teachers especially are now being presented with a new challenge above many; that of equipping themselves with digital competencies in order to better assist their students in the process of learning through the use of online tools and other online methodologies.

Methodology

The goal of this analytical report is to evaluate teacher's digital competences in 43 schools targeted by the "EU4Schools" Programme. Two main sources of information were used to draw conclusions on the level of digital competences among the teachers in the group of schools reconstructed by this programme. They combine subjective with objective information.

- Self-evaluation questionnaire: Through a questionnaire that evaluates teachers digital competence level, we have collected information from teachers based on their self-evaluation of digital competence. The questionnaire collects subjective information on teachers' self-evaluation of their digital competence.

- Big data analysis: Akademi.al, using similar framework has analysed the data to capture objective level information from the actual use of Akademi.al platform.

Self-evaluation questionnaire

Participants and data collection

There are 1229 teachers in the 43 schools, the target of this. A census methodology is prepared and gave all teachers the same chance to participate. 64% (n=782) of the teachers accepted to participate in the survey. This high response rate enhances the accuracy of the results with a margin of error 2.7 in a confidence level of 99%. Teachers from 41 schools, also showed the school they work for. 38.7% (n=303) of the participants refused to tell the name of the school. 28.4% (n=222) preferred not to tell the name of the school, 7.7% (n=60) stated that they belonged to another school not mentioned in the list and 2.7% (n=21) gave no answer.

The questionnaire was distributed via email and Akademi.al platform in google form format. The link was also shared with school principals and was distributed via WhatsApp based on an organized schedule. All teachers working in the schools of the programme were given the same opportunity to complete the questionnaire using a census methodology. The census methodology is perfect to capture the diversity of participants.

Questionnaire and instrument

The questionnaire is divided in 2 parts. The first part is the DigCompEdu instrument, and the second part is group of demographic and other characteristics of the

participants. DigCompEdu instrument developed from Christine Redecker (2017)[1] is the instrument used to evaluate the level of digital competence of teachers in the 40 schools of EU4Schools Programme. DigCompEdu is directed towards educators at all levels of education, from early childhood to higher and adult education, including general and vocational education and training, special needs education, and non-formal learning contexts. Its primary focus is to assess digital skills and IT literacy on educators. The instrument is organized in 22 items combining 6 areas of digital competence: professional engagement, digital resources, Teaching and Learning, Assessment, Empowering Learners and Facilitating Learners' Digital Competence

The six digital technology areas that focus on different aspects of educator's professional activities:

- Professional Engagement
- Digital Resources
- Teaching and Learning
- Assessment
- Empowering Learners
- Facilitating Learners' Digital Competence
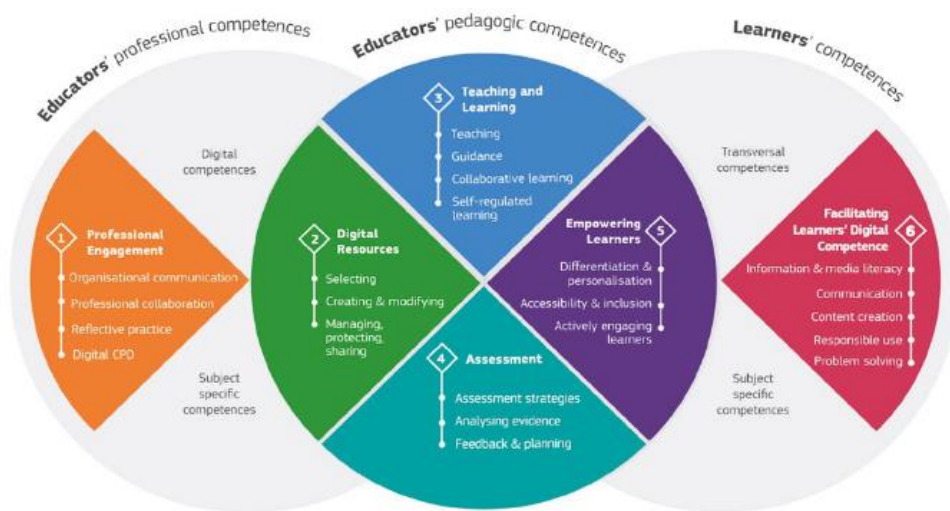
Figure 1: Digcompedu areas and scope (Redecker, 2017, pg.15)

Participants evaluate their level of competence in a scale with 5 options ranged from 0 = low competence to 4 = high competence. The items of each scale are different and tailored for each question but the values and the scale itself is the same.

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[1] Redecker, C. (2017). *European framework for the digital competence of educators: DigCompEdu* (No. JRC107466). Joint Research Centre (Seville site).

The authors have also created a progressive model to classify teachers based on their answers to the questionnaire. The *progressive model* is constructed based on the six-proficiency level that has been in use for the Common European Framework of Reference for Languages (CEFR), ranging from A1 to C2 levels. These stages and the logic of their progression are inspired by Bloom's taxonomy.
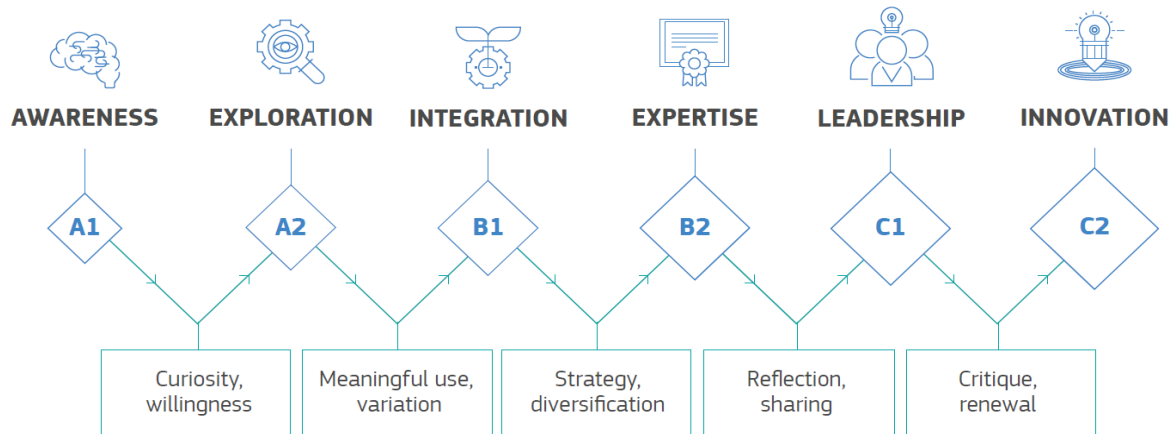
Figure 2: Progressive Model based on the six levels of proficiency as outlined in DigComEdu framework, p. 5.

Instrument preparation

DigCompEdu is a well-tested instrument in different European states since 2017 when it was first developed[2]. Replicating this instrument in Albania is very valuable first because we have the guarantee that a standardized instrument collects valuable data and information. It is also valuable to compare in the future our teachers with results from other teachers in other countries.

Instrument preparation went through several steps before it was distributed to teachers:

• Translation.

The questionnaire was translated in Albanian from a researcher of English language. The translated questionnaire was shared and discussed with the research group and was analyzed for the clarity of each item and the proper match with the English version.

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[2] 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*, *54*(3), 356-369.

Ghomi, M., & Redecker, C. (2019, May). Digital Competence of Educators (DigCompEdu): Development and Evaluation of a Self-assessment Instrument for Teachers' Digital Competence. In *CSEDU (1)* (pp. 541-548).

Cabero-Almenara, J., Gutiérrez-Castillo, J. J., Palacios-Rodríguez, A., & Barroso-Osuna, J. (2020). Development of the teacher digital competence validation of DigCompEdu check-in questionnaire in the university context of Andalusia (Spain). *Sustainability*, *12*(15), 6094.

- Group discussions

Two discussion groups were organized for questionnaire validation. The main aim of the first discussion group was to discuss each of the questions with teachers for necessary clarifications related to:

- Language clarity and terminology used in the questionnaire
- The scales used in the questionnaire and their clarity
- The adequacy of each of the questions with the context of the schools
- Grammatical errors or phrases organization

The first discussion group was organized on 22 December 2021 with the participation of 15 teachers 14 women and 1 man. 2 teachers were teaching in 9-year schools and 2 teachers were teaching in high schools. The schools were from Paskuqan, Qereka, Kavaja and Kruja. Twenty-six teachers completed the questionnaire for the pilot survey. Each participant prior to participation in the discussion completed the online version of the questionnaire.

The discussion lasted approximately 90 minutes. Each question was read, and participants expressed their suggestions and comments. In the table below is a summary of the issues encountered during the discussion and the correction made for the second discussion group.

Key corrections in the questionnaire		
No.	*Issue in the questionnaire*	*Correction*
1	Clarification of the levels of digital competence	In the second version of the questionnaire were added the longer versions of the digital competence levels
2	'*Digjitale*' or '*dixhitale*'	Terms were unified in the whole questionnaire
3	In some questions it is not quite clear the order of the scale	The key words that clarified the range of the scale were capitalized
4	'*Monitoroj arritjen e nxënësve*'	The word '*monitoroj*' was suggested to be replaced with the word '*ndjek*'
5	Spelling errors	Few spelling errors were corrected in the second version of the questionnaire.

Table 1: Grammatical corrections in the survey following focus group discussion

The questionnaire was reviewed, and the appropriate corrections were made by the team. Then the questionnaire was prepared for the next and final focus group discussion. The main aim of this discussion group was to confirm the final version of the questionnaire.

In the second discussion group there were 6 teachers. The meeting was held on January 7, 2022, in the Zoom platform. The participants completed the questionnaire prior to the discussion group. All teachers were women from 9-year-old schools from

rural areas of Mamurras, Sanxhak and Budull. Participants gave their suggestions and comments regarding the level of *comprehensiveness* for each of the questions, dimensions, and fields of the questionnaire.

Adequacy of the questions regarding the context that teacher teach in their school was also another topic of the discussion. Teachers stated that school infrastructure and access to internet, but in some cases also the economic conditions and socio-cultural background of the families, impacts the use of digital competencies of teachers and pupils in their classrooms. For example, even between teachers and pupils but also between teachers and school staff WhatsApp groups work very well since it is easy to use and easily accessible to everyone. It was suggested to consider the actual digital infrastructure of the schools when interpreting the results and crafting recommendations.

Another issue that impacts the use of digital competences of teachers is also the educational system itself with the low expectation of the system for teacher's use of digital competences within the school and in the teaching process. If there are no clear expectations on the digital competences of the teachers but broad guidelines it would be less motivating for them to upgrade their digital skills out of these expectations. Lack of adequate trainings tailored to their needs and context were also presented as a problem.

Following the discussion with the group, some grammatical corrections were made in the Albanian language version of the questionnaire. Also, the long versions of the levels of digital competence were removed from the questionnaire since we noticed from the answers in the online questionnaire that it impacted the way teachers evaluated themselves in digital competence. The final version of the questionnaire was ready and distributed on January 10, 2022.

Data analysis

The data collected through google forms were then converted to SPSS 25. The process was followed by a data cleaning process, mostly on variable labelling and coding and checking variables for high levels of missing values. The analysis is of descriptive nature and the results are widely understood and used from different actors. All sections, present information on frequency, percentage, and mean values for each question. Data are analysed also under gender perspective, and gender differences have been checked using analysis of variance ANOVA. Values of ANOVA test and significance are included in all the tables in the results section.

Validation of results

After the preliminary findings and data analysis to have a better understanding of the results and especially some of the key issues that were encountered during the data analysis a round table with the teachers is organized. 9 teachers participated in the round table of which 8 women and one man. They were teachers in schools from Kamza, Durrës and Kavaja.

A few points of discussion arose based on the findings from the data analysis, as below:

Demography Section

- Teachers were asked to elaborate on their thoughts on why 9.5% of their colleagues might've preferred not to answer the first question on the demographic section on gender. Some said that some of the teachers might've not answered this question by mistake or they might've thought that there might be a way of tracking their responses back to them and thus preferred to not give any indication of personal information.

- The same logic also follows the question over the age of the participants where 8.1% have chosen to not answer.

- On the question "*How long have you been using digital technologies in teaching*?" there was still a high response rate on the answer "*I prefer not to say*", making up an 11.8% rate for which the teachers responded with the same answer. Some of the older colleagues, that might not know how Google forms usually are used might've thought that the questionnaire was going to collect their private information data and share it with others.

Area 3: Teaching and Learning

- On the question: "*I think carefully about how, when, and why I will use digital technologies in the classroom to ensure that they are used with added value.*", 41.4% answered, "*I make basic use of available equipment, such as projectors, digital boards, computers, or tablets.*" Most of the teachers gave a unanimous answer that they had never used a digital board as this is a tool that is missing in their schools, but they've had to deal with projectors and did not consider them to be very sophisticated for their technical skills.

Area 4: Evaluation

- On the question: "*I analyse all the data I have available to timely identify students who need added support*", there was a surprisingly 38.2% response rate on the answer "*I also consider data on student activity and behaviour to identify students who need more suppo*rt" most of the teachers did not think of the question to be in an online or virtual setting, rather than on a physical one.

Ethical issues

No personal or identifiable information have been collected from the questionnaire. Participants have been informed on the aim of the survey and the destination of the data and results of the survey.

Survey and Research Limitations

This is the first time this instrument is used with Albanian teachers. To better understand teachers' digital competence a larger group of teachers participating in the survey from other schools not supported from the programme would be beneficial for comparative purpose. The results are representative of the population of teachers from the schools supported from the programme, but they are not representative of the pre university system or the region they are located. More in deep research is needed to better understand the digital competence of different groups of teachers such as from different level of experience, or subject area, level of qualification etc.

Big Data Analysis

For better assessing teacher digital competences and skills, real-time behavioural data by the Akademi.al platform was used as a means of comparison. The data has been categorized according to the DigCompEdu Framework, collected, cleaned up, and analysed using different software and tools applying algorithms and big data analysis.

The collection of data has allowed us to know how the teachers have interacted in the past with the virtual learning environment of the platform. The data has been extracted for the period from February 2021 to the end of March 2021 when all the schools in Albania were required by the Ministry of Education and Sports to use the platform as their primary digital solution for online learning. For this process, several tools are used, to allow to extract the data and later on to write tailor-made code and software for the data collection analysis.

It's also important to note that the several of the schools did not use Akademi.al as their primary tool of learning online during the February 2021 – March 2021. In this category are included the VET Schools that fall under the Ministry of Finances and Economy jurisdiction and were not required to have the teachers and students registered to the platform.

Data Processes:

Data Extraction: Akademi.al platform is using cloud computing technology to store the databases because of the security and flexibility overall. However, this prolonged the data extraction process in time as hundreds and thousands of database sources needed to be queried one by one in order to get the desired datasets. 6 scripts were written from scratch for this process.

Data Processing: Data from the data warehouse was cleaned, configured, formatted, organized, and partitioned via the computing language and was made ready for analytical queries. Approximately 445 lines of code were used to query the data without compromising the confidential personal information of the teachers and thus being compliant with the differential privacy technique in Machine Learning.

Data Cleaning: The data was scrubbed using Akademi.al's enterprise software and 4 different scripts were used to clean the data from errors, outliers, inconsistencies, duplications, and formatting errors.

Data Analysis: The data has been analysed using statistical analysis software and AI libraries in python. For the visualization, we have used Google Data Studio.

Data Analysis Pipeline process:

1. The first step was deciding on a programming language that would give us the flexibility of working with big data sets. We agreed to go with Python because of the language scope that supports advanced data structures and the number of libraries and packages that can be used in it for both analysis and visualization.
2. The framework that we used for this process is the Google Colab platform. The reason for this decision was based on the computational features that the platform provides for use. Since the data sets extracted were very large files, a normal CPU could not handle the operations and computations that we were to do. Additionally, the Google Colab platform provides a free GPU which allows the operations to be done in a much faster way as everything is computed on Google servers.
3. We have imported *matplotlib*, a very well-known library that helped us with all the operations and computations on the data.
4. Loading the data was done by calling it in Python from the .csv format that it once was.
5. The plotting process was also done within the Google Colab platform, but we used the Data Studio visualization tool for more aesthetically pleasing visual charts.

Schools and teacher demography

Teachers from 41 out of 43 schools, accepted our invitation to complete the online survey. 38.7 (n=303) of the participants chose not to indicate the name of the school where they work, and it might be quite possible that teachers from all schools have participated. There were 9 schools from Durrës with 145 teachers participating, 6 schools from Tirana with 70 teachers participating, 6 schools from Kruja with 52 teachers participating, 4 schools from Kurbin represented by 32 teachers, 2 schools from Lezha with 17 teachers participating, 5 schools from Kavaja, with 67 teachers participating, 4 schools from Rrogozhina with 13 participating teachers, 3 schools from Kamza with 48 participating teachers, and 2 schools from Vora and Shijak with 34 participating teachers. (*See annex 2 for the list of schools by district*).
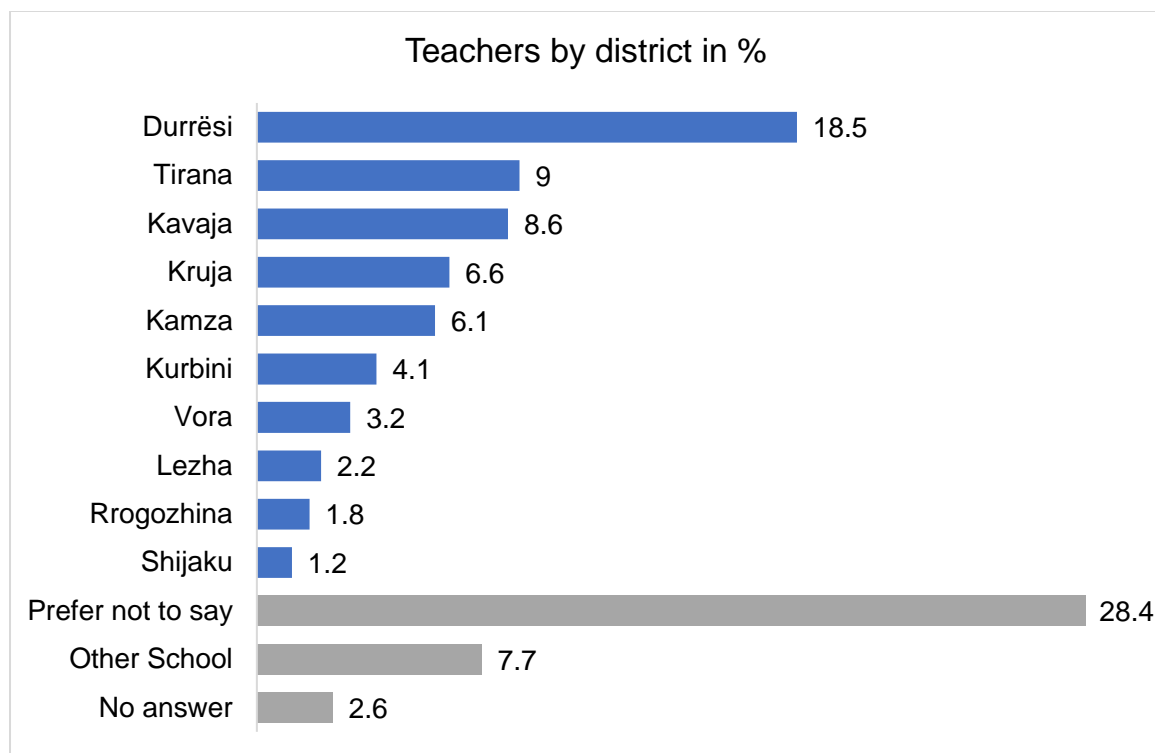
Figure 3: Number of teachers by district in %

Geography of the schools included in the survey

The programme "EU4Schools" funded by the EU in Albania and implemented by UNDP in collaboration with the Government of Albania covers schools in 11 municipalities that were destroyed or damaged by the earthquakes of 2019 including: Kruja, Durrës, Kurbin, Kamza, Kavaja, Tirana, Mirdita, Lezha, Rrogozhina, Shijak, and Vora. There are 63 educational institutions that are being built through this programme targeted through the Post Disaster Need Assessment[3]. Survey participants were

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[3] For more information on this programme please go to the portal: https://eu4schoolsportal.al/

asked to identify with the level of teaching in which they were involved as well as with the educational institution in which they worked.
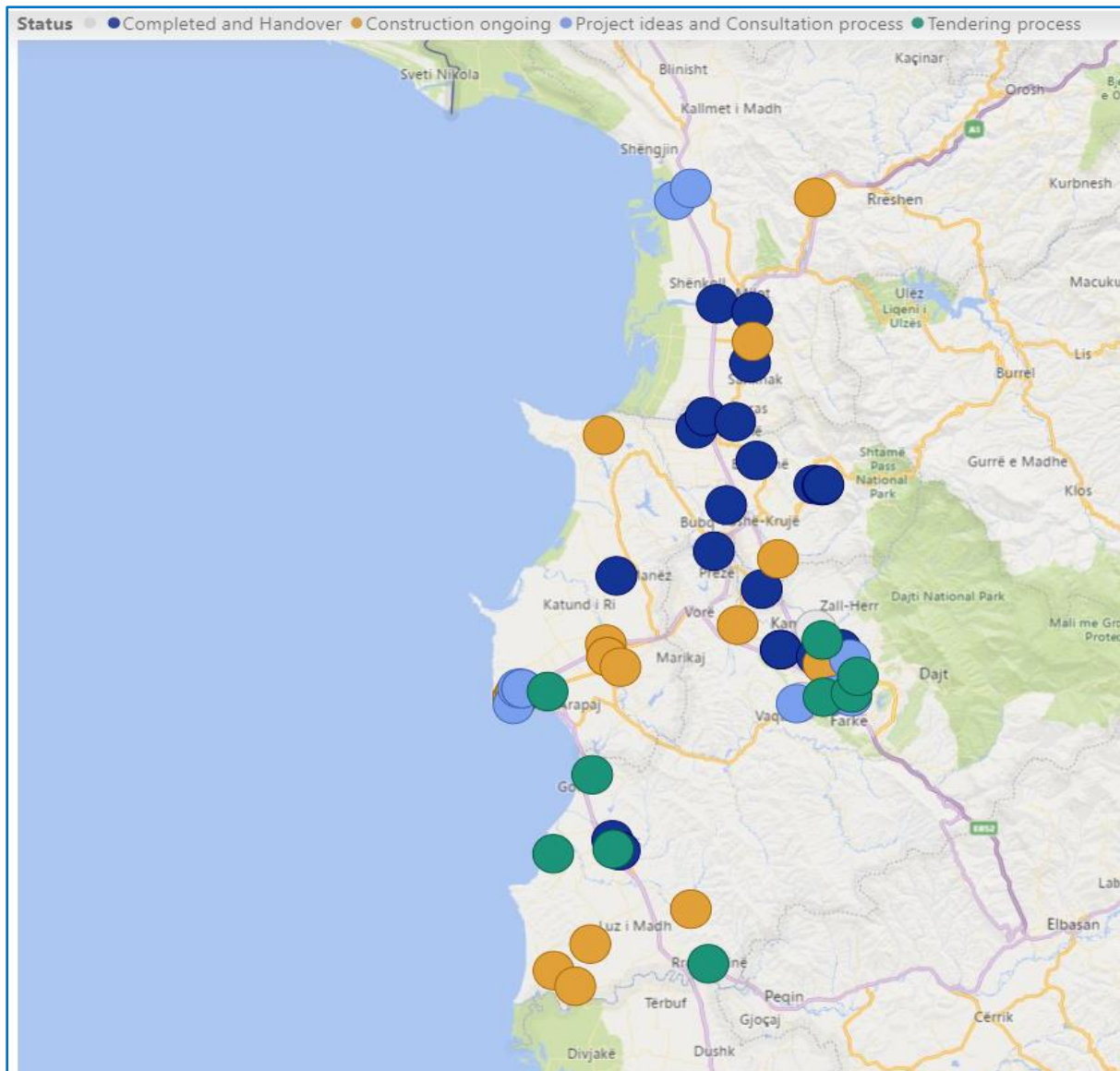
Figure 4: Map of the EU4Schools program area of intervention and status of school construction process as reported in the portal eu4schoolsportal.al

Gender

Teaching in the pre-university education is dominated by women according to the latest publication of INSTAT "Men and Women in Albania 2021"[4]. As the table below shows the number of women teachers has shown a slight increase in the academic year 2020-2021 representing almost 76% of all the teachers in the elementary education. The same rising trend in the number of female teachers is true in the secondary education as well where female teachers represent 68.4% of the teaching staff.

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[4] For more information on this publication see: http://www.instat.gov.al/media/8713/burra-dhe-gra.pdf

Mësuesit në arsimin 9 vjeçar dhe të mesëm në %
Teachers in primary and secondary education in %

Vitet - Years	Numër-Number		%	
	Burra-Men	Gra-Women	Burra-Men	Gra-Women
Në 9 vjeçare/on basic education				
2018-19	6.278	18.434	25,4	74,6
2019-20	5.999	18.371	24,6	75,4
2020-21	5.904	18.539	24,2	75,8
Në të mesme/on upper secondary				
2018-19	2.978	5.950	33,4	66,6
2019-20	2.849	5.999	32,2	67,8
2020-21	2.712	5.872	31,6	68,4

Burimi: Ministria e Arsimit Sportit dhe Rinisë
Source: Ministry of Education Sports and Youth

Figure 5: Teachers in primary and secondary education in the period 2018 - 2021 according to INSTAT

In line with this trend, survey participation is also dominated by women teachers who represented 75% of the participants in the survey. The number of male teachers who participated in the survey at 15% is lower compared to the national rate of male teachers either at the primary level of education (24%) or at the secondary level of education (32%) during the academic year 2020-21. As it was explained in the methodology section and during meetings with teachers the survey instruments ensure personal data protection also through offering to the survey participants the option of selecting responses like "prefer not to say" or "other". What was unexpected for this survey that is based on self-evaluation processes is the fact that 9% of the survey participants selected not to disclose their gender identity when asked to do so in the survey.

This fact was addressed in the focus group discussions following the survey results and the explanations provided was that teachers might have chosen to be unidentified in terms of gender to protect their identity against possible or perceived penalizing following survey results. This indicator pushed the survey team to review the data and include gender-based results for all the questions. As it will be further discussed and analysed the non-identifiable (NI) gender category provides data that are regularly lower compared to the male or female responses and often their responses become statistically significant for the different aspects of the survey. The research team also decided not to process data regarding school and subject selection to protect the identity of the teachers who participated in the survey.

Despite this development regarding gender identity, the fact remains that ¾ of the survey of participants are female teachers. This becomes an important indication for the preparation of the digital teacher training program. The training programme that is

being developed must take into consideration the fact that most teachers are young women and women who in Albanian society represent a group of people that are busy both in terms of their professional engagement with teaching and administrative duties and in terms of their personal and family engagements. Other studies related to teaching under COVID-19 pandemic have indicated the high load of work both at home and at school female teachers were engaged with[5]. The training should be short and succinct and in regular intervals possibly coinciding with working hours so that the teachers could engage in peer groups. The option for asynchronous modules of trainings is also available through akademi.al platform but nonetheless it would be more effective for teachers to engage in group training activities profiting from peer learning and sharing experiences with each other.
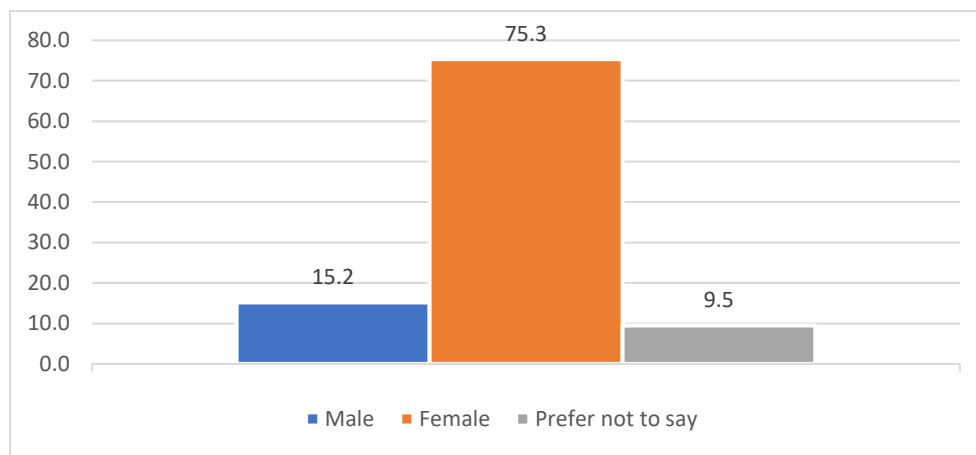
Figure 6: Gender (%) of teachers who participated in the survey

Age

Most teachers that participated in the survey were in the age group 30 – 39 years old and this counted for 30% of the participants. This group combined with two other age categories: 25 – 29 years old, and 40 – 49 years old account for 67% of the survey participants. This percentage translates well in terms of the digital training as it would be relatively easier to develop training modules for these age groups that are more familiar with the digital technologies and have more access on to them as well. Almost 7% of the survey participant teachers have chosen not to share their age. It is also important for the modules to be prepared with the adult learner in mind that in this case happens to be a teacher as well. The target group for the digital training should be teachers aged 30 – 49. Investing in their digital skills upgrading would provide

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[5] The Quality Assurance Agency for Pre-University Education (ASCAP) surveyed students, teachers and parents in March 2020. The challenge of teaching on line is addressed on page 7 in this publication: https://www.ascap.edu.al/wp-content/uploads/2020/03/Sondazhi-i-m%C3%ABsimit-online.pdf.
The project "Skills for Jobs" of Swisscontact that supports teaching in vocational education in Albania did a series of studies regarding teaching during the pandemic situation. Teachers who participated in the survey discussed the challenges of distance and online teaching while taking care of their families at the same time especially during the pandemic lock down. See page 14 in this publication: https://skillsforjobs.al/wp-content/uploads/2020/07/HOW-IS-DISTANCE-LEARNING-WORKING-FOR-VET-PHASE-I.pdf and pages 19-21 in this publication: https://skillsforjobs.al/wp-content/uploads/2020/07/HOW-IS-DISTANCE-LEARNING-WORKING-FOR-VET-PHASE-II.pdf.

continuity for the education system and its transition to digital teaching. This group can also serve the role of the peer trainer ushering younger staff into the digital teaching process, while supporting the more senior staff in becoming more effective digitally.

Survey Respondent Age %

under 25	0.8
25-29	8.1
30-39	29.9
40-49	28.9
50-59	22.5
60 or more	2.9
Prefer not to say	6.9
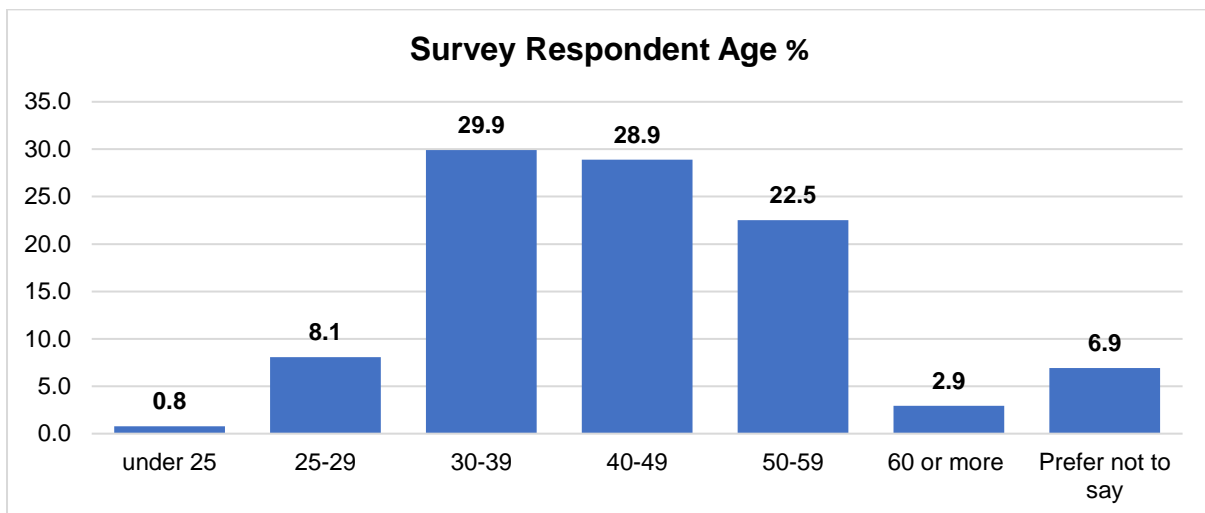
Figure 7: Age of teachers (%) who participated in the survey

Teaching experience

The teachers that participated in this survey were quite experienced with their work. Two in three teachers have ten or more years of teaching experience while over 33% of the participants claim twenty years and over. The process of change especially when it comes to teaching methods and mentality is not easy[6]. This situation represents a challenge when addressing teachers' needs towards digital education and the introduction of digital teaching methods in a country like Albania where digital transformation of schools is lagging according to the National Strategy for Education 2021-2027[7]. The experience gained during the pandemic lock down when teaching was realized either remotely or digitally should be taken into consideration and factored in when preparing modules of training for the more experienced teachers[8] to tell them that they are able to develop new skills. Once their support for digital skills training is gained the rest of the teachers will follow in that path. Initiating the training process with the younger teachers on the other hand might create a division among teachers and be counterproductive accentuating age and experience differences.

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[6] Ricard M., Zachariou A., Burgos D. (2020) Digital Education, Information and Communication Technology, and Education for Sustainable Development. In: Burgos D. (eds) Radical Solutions and eLearning. Lecture Notes in Educational Technology. Springer, Singapore. https://doi.org/10.1007/978-981-15-4952-6_2

[7] See discussion on technology in pages 50-52 of the strategy that can be accessed here: https://arsimi.gov.al/wp-content/uploads/2021/05/Draft-Strategjia-per-Arsimin-2021-2026.pdf.

[8] Please refer to footnote 5 for more information regarding digital skill trainings during COVID-19 pandemics.
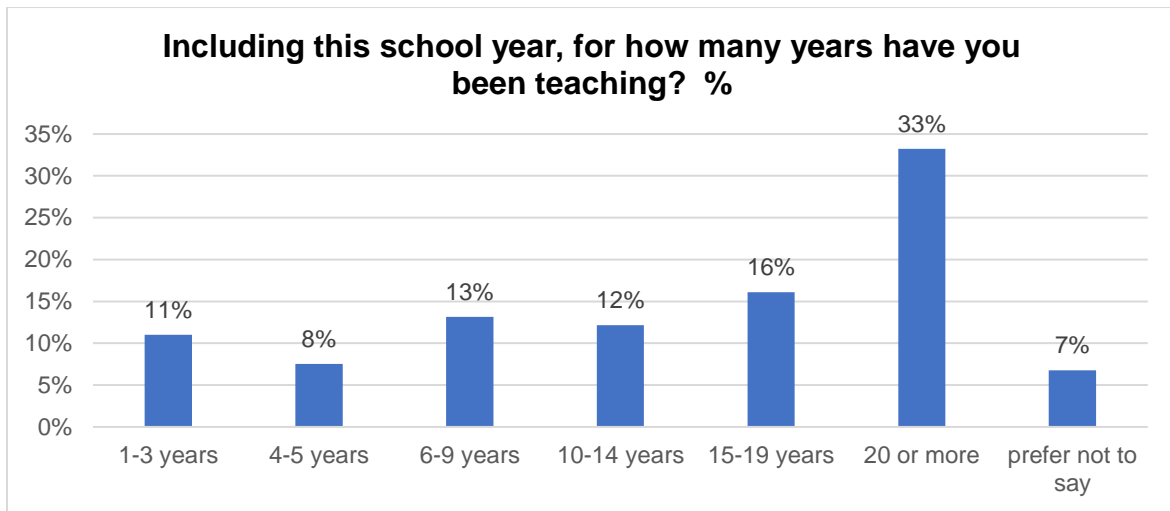
Figure 8: Teaching experience of the survey participants (%)

Education level of the school institution

Most teachers (60%) who participated in this survey teach in elementary and junior high schools – grades 1 – 9 that are also the grades of mandatory education in Albania. Teachers in higher secondary and vocational education represent 28% of the teachers. As experience during the last two years in Albania has shown introduction of digital skills in the lower grades of the education system is rather difficult given the lack of resources and the general orientation of the elementary education towards face-to-face teaching. The training modules should have the elementary school teacher in their focus as this category represents 74% of the pre-university teaching population of the total of 33027 teachers employed in the academic year 2020-21[9].

Table 2: Participant teacher distribution according to school type

In what type of school do you teach?		
	%	Nr
9-year school (grade 1 - 9)	38.5	301
9-year school (grade 1 - 9), unified	0.3	2
9-year school (grade 1 - 9), secondary	0.8	6
9-year school (grade 1 - 9), prefer not to say	0.3	2
9-year school (grade 1 - 9), other	0.1	1
Unifed (grade 1 – 12)	2.2	17
Secondary school	18.8	147
Secondary vocational school	8.7	68
Secondary unified school	0.5	4
Secondary, Secondary Vocational	0.3	2
Primary (grade 1 - 5)	21.1	165
Primary (grade 1 - 5), 9-year school (grade 1 - 9)	1.2	9
Primary (grade 1 - 5), Unified	0.4	3
Primary (grade 1 - 5), Prefer not to say	0.1	1

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[9] Please refer to figure 5 in this part of the study for more details regarding teachers in pre-university education in Albania.

Prefer not to say	5.8	45
Other	1.2	9
Total	100.0	782

Experience with digital technologies

The percentage of teachers who have not used digital technologies or who did not prefer to state their experience presents quite a considerable group: 20% of participants in the survey. This fact needs to be taken into consideration when training modules are designed to include an introductory module for people who have no prior experience with digital technologies is necessary. In this way regular pace of training for all teaching staff can be ensured.

How long have you been using digital technologies in teaching? %

Category	%
Prefer not to say	11.8
20 years or more	0.4
15-19 years	2.8
10-14 years	12.0
6-9 years	15.3
4-5 years	13.3
1-3 years	28.0
Less than 1 year	9.0
I have not yet used digital…	7.4
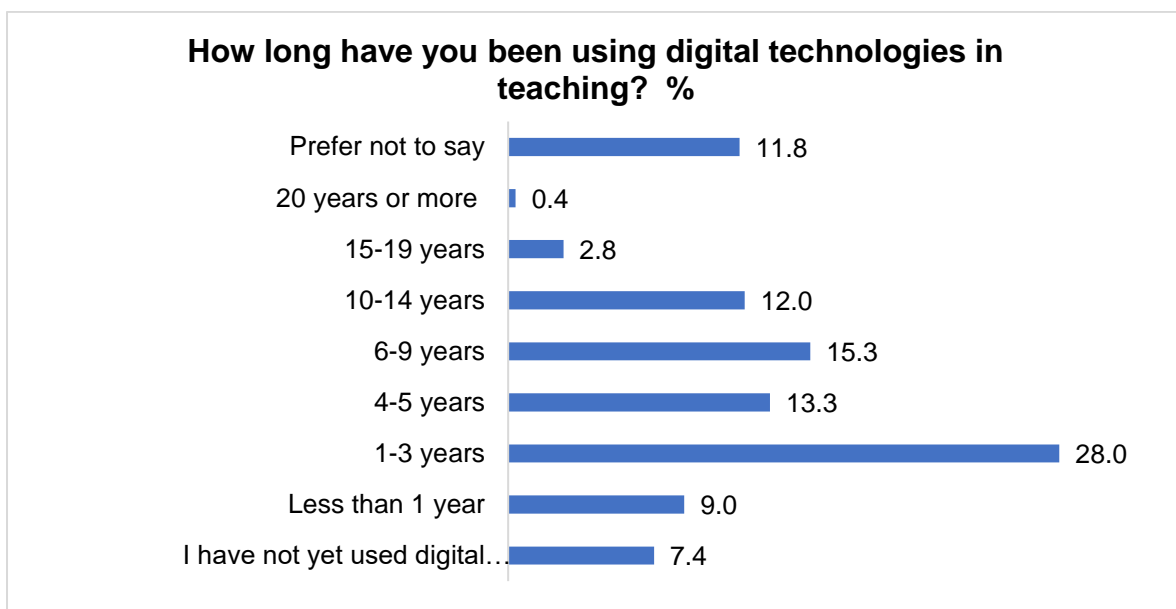
Figure 9: Teachers' digital experience in years of teaching and %.

Student age group

Over 60% of the survey participants stated that they teach children who are 12 years or older. In the Albanian educational system "12" represents the age of junior high school. Teaching children starting from the age of 12 and higher with digital technologies is relatively easier given that children over 12 in Albania have been exposed to digital technologies and are also familiar with cellular phones and other digital devices. A specific training module about digital technologies and younger pupils (aged 6 – 10) should be considered and aligned with national initiatives in Albania related to introduction of coding courses and English as a Second Language starting from the 1st grade of elementary education.

What is the age of the students you teach? %
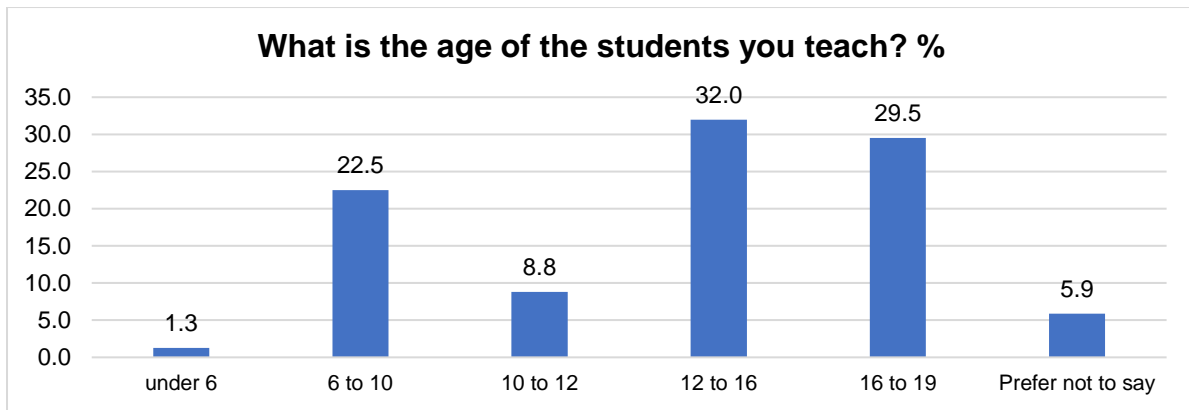
Figure 10: % of teachers based on students' age groups

Personal use of digital technologies

The survey brought about interesting information regarding the personal use of digital technologies by teachers who work in the schools reconstructed by the "EU4Schools" programme. 44% of them claimed to be members in social networks and this fact can be used to promote digital teaching and learning. In the same percentage level were those who use the internet extensively and competently. Still higher is the percentage of teachers (57%) who are willing to try new applications, programs, and resources. Nevertheless, most teachers, as the figure below shows, are not very active users of digital technologies for private purposes.

How would you describe yourself and your private use of digital technologies? (%)
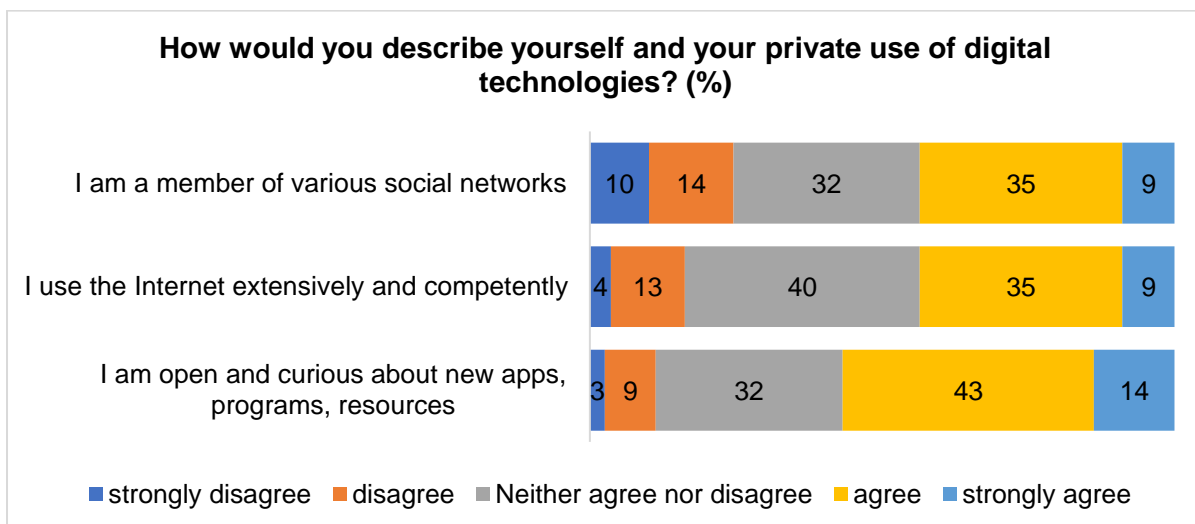
Figure 11: Teacher's use of digital technologies for private purposes (%)

Work environment

In responding to questions about work environment and digital technologies the information gathered is not clear. At the time of the survey, teachers participating in this survey were either teaching outside their schools, due to physical construction or reconstruction of their respective school premises or had just entered the newly built or reconstructed facilities as some teachers indicated in the focus groups. Despite the lack of clarity in responses, the survey clearly indicates that the working environment of the schools is not friendly towards the introduction of digital technologies for

teaching inside the classroom. As a matter of fact, the infrastructure challenge should be taken into serious consideration when developing the training modules.

What about your work environment? (%)

Statement	strongly disagree	disagree	Neither agree nor disagree	agree	strongly agree
Students have access to digital devices (laptops, tablets, smartphones) in the classroom	53	17	21	8	1
Interactive Whiteboards are available in each classroom	44	15	26	12	2
Students have access to digital devices connected to the Internet at home	36	21	31	11	1
The school's internet connection is reliable and fast	35	18	30	13	4
The school administration supports the integration of digital technologies in the…	21	16	32	24	7
Many of my colleagues use digital technologies in the classroom	19	21	40	17	3
The curriculum facilitates and supports the use of digital technologies in the classroom	12	13	39	28	7

Figure 12: Digital technologies in the work environment (%)

Evaluation and Analysis of Survey Results of Digital Teaching Competences

General Level of Competences

The concept of digital competence in teaching is a relatively new concept[10] that gained added significance during the Covid-19 lockdown. Schooling and education moved into a different environment which supported distance / online teaching and teachers were obliged to become familiar and develop the basic competences to maintain teaching in this new environment. The digital competence is generally comprised of five elements[11] that include:

- *Computerization and information literacy*. The teacher should know how to identify, organize, retrieve, store, and analyse information and digital content, evaluating its purpose.
- *Communication and elaboration*. This competence means that the teacher must master communication in the digital environment, share resources and tools, share, interact and participate in communities and networks.
- *Creation of digital content*. In this competence, the teacher must know how to create and edit new content, link and rework previous knowledge and content, make artistic productions, multimedia content and computer programming.
- *Security*. It is the essential and key digital skill and consists of personal protection, data protection, digital identity protection, use of security.
- *Problem solving*. This competence is focused on knowing how to identify needs and digital resources and in making decisions when choosing digital resources.

The survey developed asked the participating teachers from the very beginning to validate their self-proclaimed level of digital competence by selecting one of the six categories that marked the level of competence starting with A1 or newcomer / beginner level and moving up to C2 or pioneer / innovator level. The developing of categories following those of measuring language competences served to create some level of familiarity from the beginning with the survey and to also frame expectations that survey participants might have regarding this process that was taking place for the first time and with a dedicated poll for digital competences. As the graphic below shows, most of the teachers (37%) think of themselves as belonging to the B1 level of competence in terms of the skills they possess for digital teaching. The first three categories share among them most of the teachers participating in this survey, 80% of the total number of participants. Given that Albania has only during the

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[10] The concept has been applied to teacher education since around 2007 according to scholars. For more information see page 5 of the article Digital Competence in Teacher Education. McGarr, Oliver & Mcdonagh, Adrian. (2019). Digital Competence in Teacher Education. See also: (PDF) Digital Competence in Teacher Education (researchgate.net)

[11] The five elements were adopted from Additio portal that is supported by EU and facilitates digital training for teachers. For more information see regarding the competences see: What is digital competency in teaching? | Additio (additioapp.com)

last decade[12] made significant steps towards digital education and only during COVID-19 pandemics applied it the ratings that teachers have for themselves can be considered realistic from the viewpoint of having no real baseline for digital teaching before March 2020 when education system moved into distance based and online delivery.
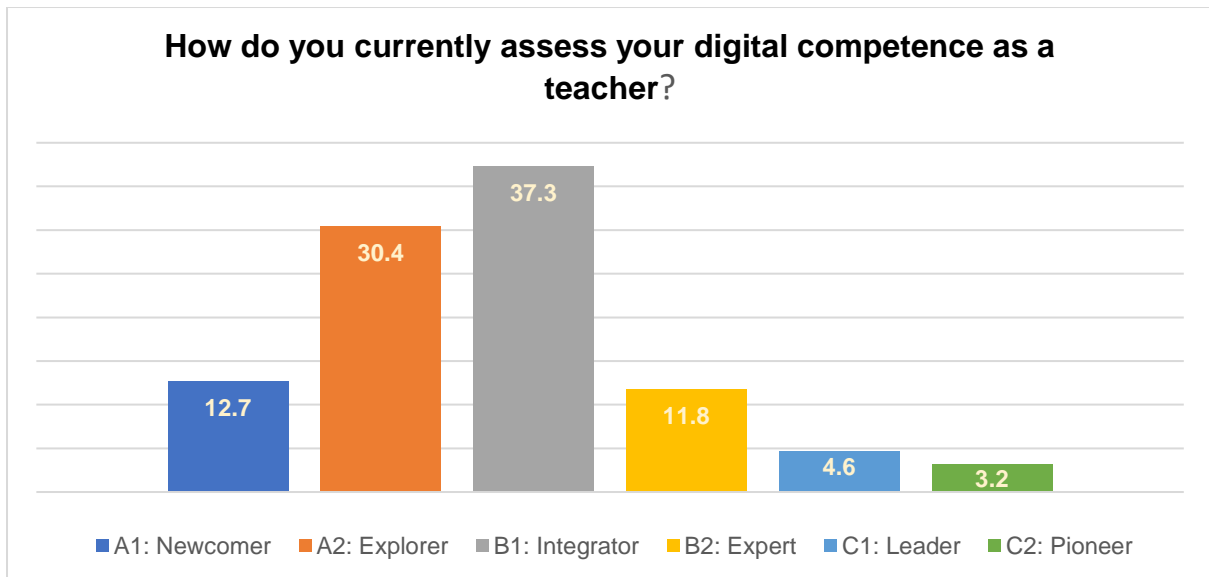
Figure 13: Teacher initial self-assessment of teaching digital competence (%)

Results were also compared by gender and as could be seen in the figure number 13 there were no differences among female and male teachers.
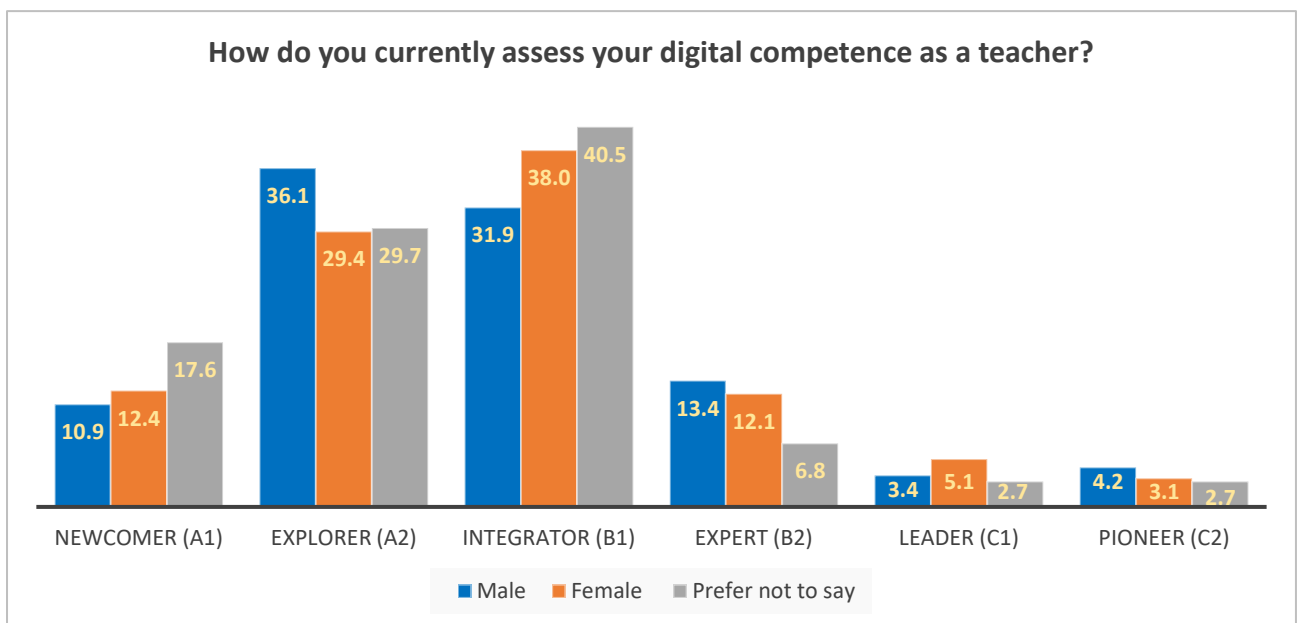
Figure 14: Teacher initial self-assessment of teaching digital competence by gender (%)

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[12] The first strategy related to digitalization of education and services in Albania is the Digital Agenda that was approved in 2015. For more information see: https://akshi.gov.al/wp-content/uploads/2018/03/Digital_Agenda_Strategy_2015_-_2020.pdf

Area 1: Professional Engagement

The first area of the survey is about how teachers professionally engage with digital technologies. The questions required teachers to rank their engagement in terms of communication, collaboration, and professional development. On average teachers score 1.73 (0 – 4 range of questions) when evaluating systematic use of different digital channels to community with students, peers, and parents. The different channels of communication included usage of emails, blogs, school website and applications. In terms of professional collaboration, the mean score was 1.94. Teachers were asked to rank their experiences of collaboration both inside and outside their schools and on the mode of cooperation. The process of digital skills development had a mean score of 2.09. Teachers were asked to rank their experiences in terms of both personal improvement and community experiences resulting in growth towards digital teaching skills. The last question with a mean score of 2.03 asked teachers to rank their experiences with online training opportunities.

The average score for the whole area of professional engagement with digital technologies is 1.95, which is relatively quite high given the fact that the group of teachers that participated in this survey are from schools that are destroyed by the earthquake of November 2019 and with limited opportunities for professional engagement. During focus discussions teachers mentioned the massive amount of work they had to do in order to transfer their teaching to distance or online provision and how this process helped them develop the digital competences to teach online.

Professional Engagement (mean)

Reflective practice	2.09
Digital Continuous Professional Development	2.03
Professional collaboration	1.94
Organizational communication	1.73

Figure 15: Mean results in professional engagement (0 - 4)

Analysis of results in the professional engagement area.

The first statement requires teachers to evaluate their systematic use of alternative digital channels for communication purposes. The high level of self-evaluation regarding combination of different communication channels to communicate and developing systematic processes to communicate effectively are not realistic. In the table below the average results for these categories (2 and 3) account for 42% of the

total of the general population. This percentage drops by 1 for the male category (41%) and moves up to 44% for the female teachers.

Most of the schools in Albania do not have active websites (Facebook pages on personal level are the exception) that allow for active communication. Usage of blogs is not common among teachers in Albania either. Adding to these factors the pandemic situation and the lack of school infrastructure did not make the digital communication any easier. The results represent an effort to embellish the difficulties of digital communication when taking into consideration the very high percentage 48.6% among NI teachers who supported the statement about basic use of digital communication channels (1). The other half of the teachers have been more realistic when choosing to describe their communication either by stating rarely (12.7%) or stating that they used basic digital communication channels (37.3%). This percentage in increased among male teachers and decreased among women teachers who in general have a rather positive perception regarding usage of digital channels to enhance communication with students and parents. Following the pandemics communication teacher-parent-student via social communication platforms like WhatsApp and Viber flourished in Albania and this was also made evident in the studies undertaken during 2020 by ASCAP (general education) and Skills4Jobs project (vocational education).

1. I systematically use different digital channels to enhance communication with students, parents and colleagues e.g., emails, blogs, the school's website, Apps							
		Total	Male	Female	NI	F	p
		% (N)	% (N)	% (N)	% (N)		
Scale	Mean values	1.73	1.63	1.78	1.47		
0	I rarely use digital communication channels	12.7(99)	10.1 (12)	12.9 (76)	14.9 (11)	2.819	0.060
1	I use basic digital communication channels, e.g. e-mail	37.3(292)	43.7 (52)	34.6 (204)	48.6 (36)		
2	I combine different communication channels, e.g. e-mail and class blog or school website	22.6(177)	24.4 (29)	22.8 (134)	18.9 (14)		
3	I systematically select, adjust and combine different digital solutions to communicate effectively	19.4(152)	16.8 (20)	21.2 (125)	9.5 (7)		
4	I reflect on, discuss and proactively develop my communication strategies	7.9(62)	5.0 (6)	8.5 (50)	8.1 (6)		
	Total	100.0(782)	100.0 (119)	100.0 (589)	100.0 (74)		

Table 3: Digital Communication

The analysis indicates a statistically significant difference on the mean values of the ratings for the statement asking teachers to rate their usage of digital technologies.

The unrealistic situation is evident when teachers were to evaluate professional collaboration. 38.5% of them claimed to use shared drives and cooperate in digital environments (3) at a time when this is not common and when no investment is made to develop digital collaborative environment for teachers. Furthermore, there are no known digital teacher networks that allow for exchange of materials online. During the pandemic lockdown teachers exchanged materials either via WhatsApp groups or emails which corresponds to 30.2% of responses to this set of data.

2. I use digital technologies to work together with colleagues inside and outside my educational organisation (kindergarden, school, University)							
scale		Total	Male	Female	NI	F	p
		%(N)	%(N)	%(N)	%(N)		
	Mean values	1.94	1.92	1.97	1.69		
0	I rarely have the opportunity to collaborate with other teachers	4.2(33)	6.7 (8)	3.9 (23)	2.7 (2)	2.919	0.05
1	Sometimes I exchange materials with colleagues, e.g. via e-mail	30.2(236)	31.1 (37)	28.4 (167)	43.2 (32)		
2	Among colleagues, we work together in collaborative environments or use shared drives	38.5(301)	31.9 (38)	39.9 (235)	37.8 (28)		
3	I exchange ideas and materials, also with teachers outside my organisation, e.g. in an online teacher network	22.0(172)	23.5 (28)	22.6 (133)	14.9 (11)		
4	I jointly create materials with other teachers in an online network	5.1(40)	6.7 (8)	5.3 (31)	1.4 (1)		
	Total	100.0 (782)	100.0 (119)	100.0 (589)	100.0 (74)		

Table 4: Digital technologies

Teachers who participated in this survey seem to be quite active in developing their digital skills at a time when they had very few opportunities to use digital resources in the new or reconstructed school facilities. In focus group discussions with teachers before the survey was launched, they discussed the lack of having regular internet at their schools and digital equipment. Their statements are in direct contradiction with the relatively high percentage (20%) of responses to the statement "I use a range of resources to develop my digital teaching skills". On the other hand, the highest score related to digital skills development is for the statement that focusses on peer-to-peer discussion, which during the pandemic situation was the main way teachers learned how to teach remotely and online.

3. I actively develop my digital teaching skills							
		Total	Male	Female	NI	F	p
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean values	2.09	2.03	2.14	1.85		

		Total	Male	Female	NI	F	p
0	I rarely have the time to work on my digital teaching skills	7.9(62)	9.2 (11)	7.3 (43)	10.8 (8)		
1	I improve my skills through reflection and experimentation	26.9(210)	25.2 (30)	26.7 (157)	31.1 (23)		
2	I use a range of resources to develop my digital teaching skills	20.1(157)	24.4 (29)	19.0 (112)	21.6 (16)	2.420	0.090
3	I discuss with peers how to use digital technologies to innovate and improve educational practice.	38.4(300)	36.1 (43)	39.2 (231)	35.1 (26)		
4	I help colleagues in developing their digital teaching strategies.	6.8(53)	5.0 (6)	7.8 (46)	1.4 (1)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 5: Digital Teaching Skills

The scores are more realistic regarding online training opportunities. Most of the teachers have stated that they participated in online trainings once or twice, a situation that corresponds with the national trainings organized by the Quality Assurance Agency in Pre-University Education (ASCAP) in Albania[13]. A third of teachers also stated that they have not participated in any trainings of digital nature. The mean value for the NI category is also lower compared to female and male teacher scoring for the statement about online training opportunities. The highest percentage level in this category is by male teachers who claim to have participated only once or twice in trainings online.

4. I participate in online training opportunities e.g. online courses, MOOCs, webinars…							
		Total	Male	Female	NI	F	p
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean values	2.03	2.02	2.06	1.77		
0	This is a new area that I have not yet considered	5.6(44)	7.6 (9)	4.6 (27)	10.8 (8)	2.416	0.090
1	Not yet, but I am definitely interested	27.2(213)	21.0 (25)	28.0 (165)	31.1 (23)		
2	I have participated in online training once or twice	37.9(296)	42.0 (50)	37.0 (218)	37.8 (28)		
3	I have tried out various different online training opportunities	17.5(137)	21.0 (25)	17.7 (104)	10.8 (8)		
4	I frequently participate in all kinds of online training	11.8(92)	8.4 (10)	12.7 (75)	9.5 (7)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 6: Online training opportunities and participation

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[13] The Quality Assurance Agency for Pre-University Education (ASCAP) surveyed students, teachers and parents in March 2020. The challenge of teaching on line is addressed on page 7 in this publication: https://www.ascap.edu.al/wp-content/uploads/2020/03/Sondazhi-i-m%C3%ABsimit-online.pdf.

Training needs on professional engagement

The results from the first area of questions focusing on professional engagement make very imperative and evident the need for trainings to initiate digital competences of teachers and further develop them in those schools and among those teachers where these competences exist. The contradictory responses are indicative of the needs that teachers must understand better the concepts and usage of digital technologies for teaching purposes. A training module dealing with the basic concepts of digital technologies in use during the teaching process combined with the selection of the most effective digital methods of digital communication would help teachers realize better the digital aspects of teaching and communication. Trainings about effective use of digital communication tools besides email and WhatsApp connecting communication with the curriculum and targeting the post-elementary level of education must be considered.

The results also indicate the need for subject related trainings in terms of communicating content effectively and developing collaboration among teachers based on subject content development. As the subject related data collected were inconclusive statistically regarding subject taught by survey participating teachers, teaching specializations need be considered when grouping the teachers for training vis-à-vis group subjects and grade categories used including:

- Elementary school teaching
- Math and sciences
- Social sciences
- Albanian language and literature
- Foreign Languages
- Life sciences
- Sports and physical training
- Arts and crafts.

Area 2: Digital Resources

Teaching in pre-university system in Albania can be a very static process. Teachers follow the curriculum diligently and use books and related resources as provided by the school principal and the local education directorate. Moving teaching online required teachers to exercise their own initiative regarding the selection of teaching materials that they were going to use to supplement their regular curriculum during the time of pandemic lock-down. The second area of the survey deals with the process of working with and developing digital resources. Teachers were required to evaluate their experiences in selecting, creating, and managing digital resources. The overall average score for this area is 1.91 which is rather high when taking into consideration the situation with digital resources available in the Albanian language. Except for videos and some digital resources produced by Akademi.al and MesoVET.al there are very limited resources around that are not based on a pdf version of a schoolbook generally provided by the book publishers.

In terms of internet usage towards selection of digital resources for teaching purposes, teachers had a mean score of 1.91. They were asked to evaluate processes related to digital searches for online materials that could be adapted for their teaching and classes. On average teachers score 1.74 when evaluating creation and development of digital resources. Teachers were asked to evaluate their experience with the development of their own digital resources. Regarding protection of sensitive digital materials, teachers had a mean score of 2.1 indicative of the fact that they are aware of the needs to be safe and protect digital content.

Digital Resources (mean)

Managing, protecting and sharing digital resources	2.10
Selecting digital resources	1.91
Creating and modifying digital resources	1.74
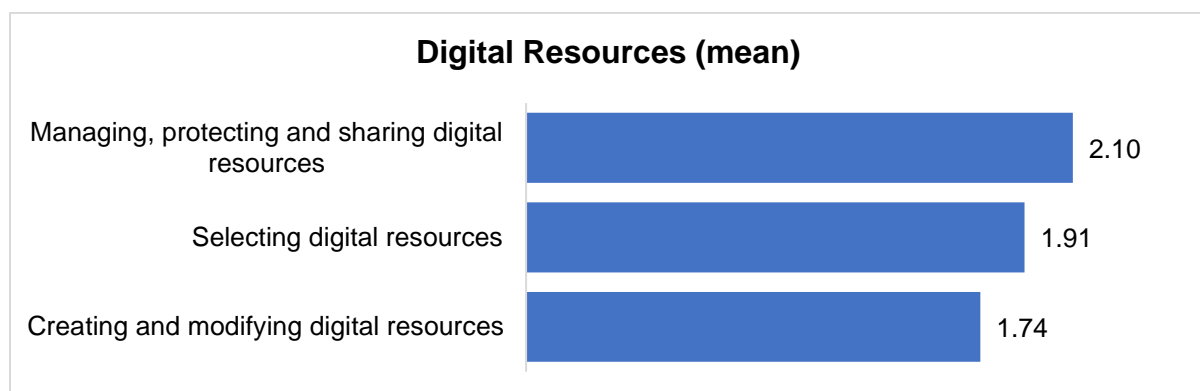
Figure 16: Mean results (0 - 4) regarding usage of digital resources

Analysis of results

The first evaluative statement about digital resources in the table below asked teachers to consider the connection between digital resources and the specific context of the classes and the pedagogical approaches that yield most towards digital resources. It is encouraging to note that 40.5% of the teachers could evaluate and select resources suited to their students' needs and this carries through in the gender-based data results as well. Together with the group that used search engines to find relevant resources they make up over 71% of all the participants in the survey. This

goes to show that teachers participating in the survey have developed the basic skills required to work with digital resources and put them into functional use in their classes.

1. I use different internet sites & search strategies to find & select a range of different digital resources							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
scale	Mean Values	1.91	1.91	1.94	1.69		
0	I only rarely use the internet to find resources	4.7(37)	6.7 (8)	4.2 (25)	5.4 (4)	2.373	0.094
1	I use search engines and educational platforms to find relevant resources	29.7(232)	29.4 (35)	28.7 (169)	37.8 (28)		
2	I evaluate and select resources on the basis of their suitability for my learner group	40.5(317)	38.7 (46)	40.9 (241)	40.5 (30)		
3	I compare resources using a range of relevant criteria, e.g. reliability, quality, fit, design, interactivity, appeal	19.7(154)	16.8 (20)	20.9 (123)	14.9 (11)		
4	I advise colleagues on suitable resources and search strategies	5.4(42)	8.4 (10)	5.3 (31)	1.4 (1)		
	Total	100 (782)	100 (119)	100 (589)	100 (74)		

Table 7: Ways of finding and selecting digital resources

The second evaluative statement required teachers to evaluate their engagement with digital resources and how actively they are involved in the processes of digital creation. There was statistically significant difference observed in the mean values of the evaluations where the NI group of teachers scored 1.45 out of 4. Over 60% of the teachers claimed modest creation of resources based on the selections for statements 1 and 2. If we add to these two categories the first one who stated that they did not create their own digital resources, most of the teachers seem to be in the initial steps of engaging with digital resources. The presence of statistical significance difference in the results following gender break-down also shows that the process of developing digital resources is self-driven and not regulated by the Ministry of Education or its regional bodies.

2. I create my own digital resources and modify existing ones to adapt them to my needs							
		Total	Male	Female	NI	F	p
		%(N)	%(N)	%(N)	%(N)		
scale	Mean Values	1.74	1.64	1.80	1.45		
0	I do not create my own digital resources	8.2(64)	14.3 (17)	6.5 (38)	12.2 (9)	4.394	0.013
1	I do create worksheets with a computer, but then I print them	42.2(330)	37.0 (44)	41.8 (246)	54.1 (40)		
2	I create digital presentations, but not much more	22.5(176)	23.5 (28)	22.9 (135)	17.6 (13)		

3	I create and modify different types of resources	21.4(167)	21.0 (25)	22.9 (135)	9.5 (7)		
4	I set up and adapt complex, interactive resources	5.8(45)	4.2 (5)	5.9 (35)	6.8 (5)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 8: Personal engagement with digital resources

The third statement in this area of the survey asked the teachers about protection mechanisms and measures they used to safeguard their digital content. Results based on teacher responses of the unidentified gender group are statistically significant. About 40% of the teachers claim to protect some personal data (responses to question 2) and 26% used passwords to protects files (3). The percentage of teachers who protect personal data drops to 33.6 for the male category of teachers and drops to 20.3% regarding file password protection processes for the gender non-identified group. The evaluations for this question are not very telling regarding copyright and awareness towards privacy rules. In the focus group discussions teachers mentioned that they were aware of the practice of having students copy digital content and bring it printed in their classroom as part of portfolio requirements for different subjects. They also mentioned that they do not require students to process copyright information regularly. Both the discussion and the responses as outlined in the table below show that there is a lot to be done to have teachers understand fair use of digital content, open licenses, and open educational resources and how to attribute the rights to these resources.

3. I effectively protect sensitive content, e.g. exams, students' grades, personal data							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
scale	Mean Values	2.1	2.02	2.16	1.76		
0	I do not need to do that, because the school takes care of this	14.1(110)	19.3 (23)	12.2 (72)	20.3 (15)	4.264	0.014
1	I avoid storing personal data electronically	10.2(80)	10.1 (12)	9.7 (57)	14.9 (11)		
2	I protect some personal data	38.6(302)	33.6 (40)	39.6 (233)	39.2 (29)		
3	I password protect files with personal data	26.0(203)	23.5 (28)	27.2 (160)	20.3 (15)		
4	I comprehensively protect personal data, e.g. combining hard-to-guess passwords with encryption and frequent software updates	11.1(87)	13.4 (16)	11.4 (67)	5.4 (4)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 9: Protection of sensitive content

Training needs

The second area of the survey brings forward the fact that there is a lot to be done regarding fair use and fair production of digital resources based on open licenses and educational resources. The modules developed to train teachers on how to use digital resources must initiate a culture shift regarding fair use of free and open materials and copyrighted materials[14].

Teachers require training in the process of applying copyright rules, avoiding plagiarism, and protecting sensitive information belonging to their students and themselves. They also need to be trained on how to use research tools online and become effective in the process. Teachers need to become aware of online resources available in the Albanian language but also on the simple techniques that they can use to translate online resources and cite properly. In cooperation with each other teachers can develop lists of resources based on school subjects.

On the other hand, their presentation skills can benefit a lot from digital content. They need to be trained how to be more effective in their presentations and how to use MS PowerPoint or other presentation software for their classes. Building on the experiences developed during the lockdown, teachers should become more effective in using online tools to develop online tests and examinations that would not require paper usage and that make grading processes fairer and democratic. A short training module regarding gaming as a method of teaching[15], especially making use of digital resources must be considered as well to allow for more active classes both in the school and out of it.

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[14] School books in the Albanian language that are in use are loaded with photos and other materials that do not respect copyright laws and principles of fair use of digital materials.
[15] Tobias, S., Fletcher, J. D., & Chen, F. (2015). Digital Games as Educational Technology: Promise and Challenges in the Use of Games to Teach. Educational Technology, 55(5), 3–12. http://www.jstor.org/stable/44430402.

Area 3: Teaching and Learning

The core processes that bring students and teachers together in a school setting, i.e., teaching, and learning, were in the focus of the evaluation in the 3ʳᵈ area of the survey. There were four statements that required teachers' evaluation in this field. The average score for teaching was 1.26 and this was related to the plans that teachers had for the use of digital devices and resources during the teaching process. Level of experimentation with new digital technologies appropriate for teaching was also part of the evaluation. In the statements related to digital guidance for students in the learning process the focus was again on communication processes that enhance learning both during and after classes. The average score was 1.79. Efforts to develop collaborative learning scored quite highly with 2.02 which should be telling of an increasing collaboration between teachers and their students based on digital technologies. The process of self-regulated learning had a score of 1.39 and the choices of answers towards this statement were supposed to clarify students' own path of digital learning.

Teaching and Learning (mean)

Collaborative learning	2.02
Guidance	1.79
Self-regulated learning	1.39
Teaching	1.26
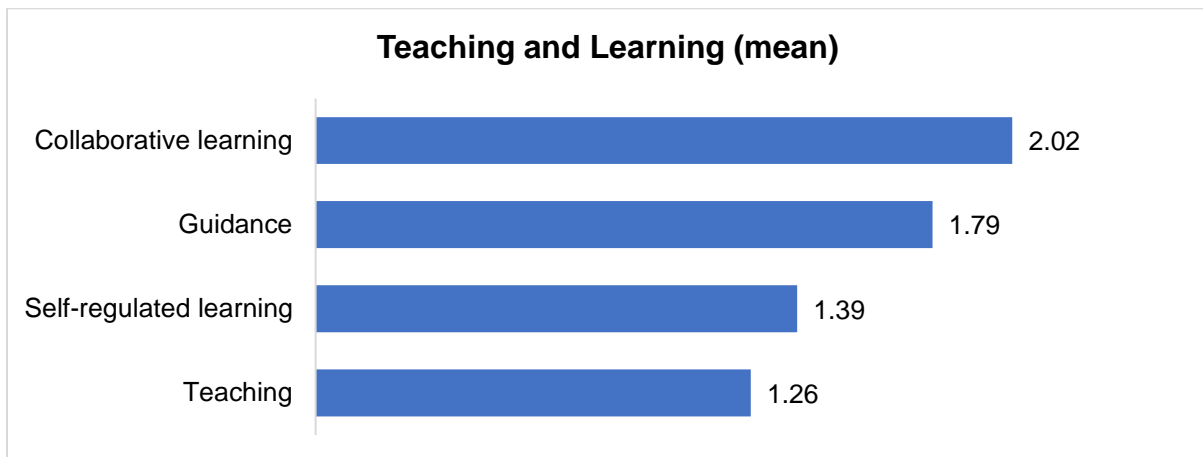
Table 10: Mean results (0 - 4) teaching and learning

Analysis of results

Teachers in their majority, over 70%, have been realistic in assessing their use of digital technologies during classes. The results for the category of NI mark statistically significant difference providing for the challenges and issues that digital education faces in Albania. As it has been made evident in the national strategy for education, the digital infrastructure in schools in Albania is poor[16] and that is why almost 29% of

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[16] See the national strategy of education for Albania 2022-2026 page 51: https://arsimi.gov.al/wp-content/uploads/2021/05/Draft-Strategjia-per-Arsimin-2021-2026.pdf. In 2017, in pre-university schools, the computer-student ratio was 1:27, quite lower than the EU countries' standards, where there is 1 computer available for 3-7 students. On the other side, the number of non-functioning computers reaches up to 25% of their total number which speaks of lack of maintenance. Meanwhile, internet speed mostly, does not meet the users' requirements. Besides that, access to ICT equipment and internet is mainly limited by dedicated computer labs, whereas the opportunities to utilize the devices in classes are very limited, due to the lack of projectors, of the wireless network and other dedicated accessories. All these factors are the biggest obstacle in using ICT in schools.

the teachers (43.2% of the NI group) claimed that they did not or rarely used technology in class (option 0). The group of teachers that stated that they used different digital strategies and tools in their teaching (option 2 and 3) represent over 22% of the respondents (11% of the NI group). During the focus group discussions, we asked teachers about the digital tools that they used to enhance digital teaching. Their common response was associated with the use of overhead projectors in their classrooms. The teachers also indicated that there is only one overhead projector for the whole school. With the almost non-existing technological infrastructure, it would be a real challenge do develop effective training based on peer-to-peer engagement or classroom based digital performance.

1. I carefully consider how, when and why to use digital technologies in class, to ensure that they are used with added value							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	1.26	1.37	1.29	0.81		
0	I do not or only rarely use technology in class	28.9(226)	26.9 (32)	27.5 (162)	43.2 (32)	6.091	0.002
1	I make basic use of available equipment, e.g. digital whiteboards or projectors	41.4(324)	37.0 (44)	42.1 (248)	43.2 (32)		
2	I use a variety of digital strategies in my teaching	11.5(90)	15.1 (18)	11.5 (68)	5.4 (4)		
3	I use digital tools to systematically enhance teaching	11.1(87)	14.3 (17)	11.2 (66)	5.4 (4)		
4	I use digital tools to implement innovative pedagogic strategies	7.0(55)	6.7 (8)	7.6 (45)	2.7 (2)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 11: In class use of digital technologies

Teachers were also realistic in their scoring for the second statement related to the monitoring of student activities. As the table below indicates almost 2/3 of all the teachers are not monitoring student engagement in collaborative online environments. It is not clear from the responses if the teachers have understood that what was to be monitored was students' online activity taking place on collaborative platforms. This point was raised with the teachers in the focus group that shared two possible reasons for the responses. First, teachers were most probably referring to online activities they did online through Akademi.al including having students watch the teaching videos uploaded in this portal. Another possible explanation provided is that teachers did not consider that the statement was about digital activities and interactions. The word digital is not part of the second evaluative statement in the table below. As mentioned earlier except for Akademi.al the collaborative platforms in the Albanian language are quite limited it needs to be further investigated what did teachers who claimed to monitor, analyse, and intervene mean regarding online activities of their students.

2. I monitor my students' activities and interactions in the collaborative online environments we use							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	1.79	1.75	1.81	1.62		
0	I do not use digital environments with my students	24.0(188)	27.7 (33)	22.4 (132)	31.1 (23)	0.807	0.447
1	I do not monitor student activity in the online environments we use	11.1(87)	9.2 (11)	11.9 (70)	8.1 (6)		
2	I occasionally check on them and their discussions	37.6(294)	32.8 (39)	38.2 (225)	40.5 (30)		
3	I regularly monitor and analyze my students' online activity	16.8(131)	21.0 (25)	17.0 (100)	8.1 (6)		
4	I regularly intervene with motivating or corrective comments	10.5(82)	9.2 (11)	10.5 (62)	12.2 (9)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 12: Monitoring of student interactions and activities online

The gender disaggregated responses provide for a statistically significant difference in the mean values for male teachers. The responses make it clear that group work among students is encourages by teachers. What was unclear regarding teacher responses was the issue of the digital formats they asked students to present their work. During the focus group discussions, it was explained that teachers were referring to presentations made online during the time the time of Covid-19 lock down or to the usage of overhead projectors to present power point presentations in the classroom.

3. When my students work in groups or teams, they use digital technologies to acquire and document evidence							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	2.02	1.85	2.06	1.91		
0	My students do not work in groups	5.9(46)	7.6 (9)	5.6 (33)	5.4 (4)	3.140	0.044
1	It is not possible for me to integrate digital technologies into group work	20.8(163)	22.7 (27)	20.0 (118)	24.3 (18)		
2	I encourage students working in groups to search for information online or to present their results in digital format	44.6(349)	49.6 (59)	43.1 (254)	48.6 (36)		
3	I require students working in teams to use the internet to find information and present their results in a digital format	23.0(180)	17.6 (21)	24.8 (146)	17.6 (13)		
4	My students exchange evidence and jointly create knowledge in a collaborative online space	5.6(44)	2.5 (3)	6.5 (38)	4.1 (3)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 13: Student group work and digital technologies

Following the selection of choices made by teachers in response to the 4th statement in the table below it becomes evident that their responses are a clear indication that self-regulated learning represents quite a far-reaching goal in the reality of pre-university education in Albania today whereas 30% of the teachers (choice 0) state that self-regulated learning is not possible in their school environment. This percentage goes to 38% in the group of teachers that does not want to be gender identified.

4. I use digital technologies to allow students to plan, document and monitor their learning themselves E.g., quizzes for self-assessment, e-Portfolios for documentation and showcasing, online diaries/blogs for reflection…							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	1.39	1.53	1.40	1.12		
0	Not possible in my work environment	29.5(231)	27.7 (33)	28.9 (170)	37.8 (28)	2.869	0.057
1	My students do reflect on their learning, but not with digital technologies	24.2(189)	18.5 (22)	25.1 (148)	25.7 (19)		
2	Sometimes I use, for example, quizzes for self-assessment	26.9(210)	28.6 (34)	26.7 (157)	25.7 (19)		
3	I use a variety of digital tools to allow learners to plan, document or reflect on their learning	16.2(127)	23.5 (28)	15.8 (93)	8.1 (6)		
4	I systematically integrate different digital tools to allow learners to plan, monitor and reflect on their progress	3.2(25)	1.7 (2)	3.6 (21)	2.7 (2)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 14: Digital technologies and student self-monitoring of knowledge

Training needs

The area of teaching and learning will be the most challenging for the training which should initiate a culture shift regarding hybrid methods of teaching and learning as well as promotion of monitored autonomous learning. The training modules should make it clear that video watching is not a pure digital resource but making a video to illustrate a notion or theory using digital devices, including cell phones, and posting them online for review is. Training in school settings especially for this area is seriously challenged because of the lack of the supporting infrastructure. The scores for the evaluative statements in this field indicate the basic and urgent needs that teachers have for continuous training in digital teaching and in developing cooperative modes of learning using online teaching platforms. Based on the results for this area, self-regulated learning should not be in the focus of the trainings as it requires advancements in the digital infrastructure available in schools.

Area 4: Assessment

This area of the survey brings forward information related to the process of digitally assessing students' knowledge. Answer choices to the evaluative statement on

assessment strategies seek to understand how teachers used digital technologies to make assessment more effective and diverse. The mean score for this was 0.91 which represents the lowest mean score given. The answer choices related to the statement about evidence-based analysis for grading scored 2.14 and the purpose of this statement was to ask teachers to evaluate their digital activity. The answer choices to the third evaluative statement required teachers to evaluate how they used digital technologies to provide feedback and the mean score for this statement was 1.37.

Assessment (mean)

Analyzing evidence	2.14
Feedback and Planning	1.37
Assessment strategies	0.91
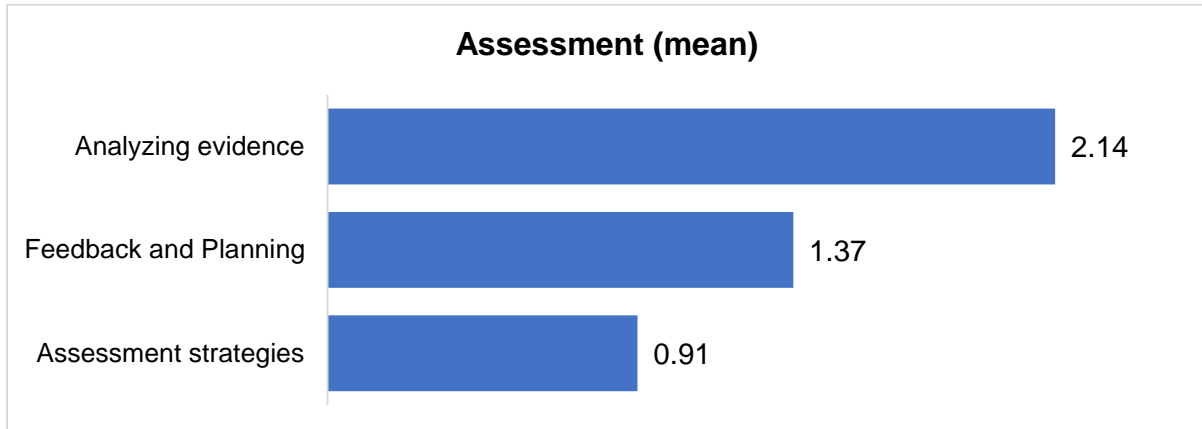
Figure 17: Mean results for the area of Assessment (0-4)

Analysis of results

Responses to the evaluative statement asking teachers how they used digital assessment to monitor the progress of their students brings another dose of reality in the process of self-evaluation of digital competences. Although the lowest mean score for the whole survey, 0.91, it provides one of the most realistic evaluations that teachers have noted. This score, disaggregated by gender, marks a statistically significant difference for the NI gender category, whose mean score is 0.49%. The 62% rate of response for answer choice 0 in the table below makes it clear that teachers do not have access to digital technologies when it comes to monitoring of student progress. During the pandemic lock down several of them learned how to use online forms to prepare quizzes to test students' knowledge and the fact that 25.6 attest to that is a clear indication. Knowledge assessment in pre-university education in Albania is not diverse. It is rather schematic in fact and follows educational guidance provided for these purposes very closely. Efforts to digitalize grade books and students' attendance have just started with the development of SMIP[17] on the E-Albania Platform, a joint project of the MoES and NAIS.

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[17] https://smip.al/login. SMIP – Sistemi i Menaxhimit të Informacionit Parauniversitar (System of Managing Pre-university Information) represents a repeated effort to digitalize education data in the pre-university education system in Albania.

Table 15: Digital assessment tools in use to monitor students' progress

1. I use digital assessment formats to monitor student progress							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	0.91	0.85	0.98	0.49		
0	I do not monitor students' progress	62.0(485)	66.4 (79)	59.1 (348)	78.4 (58)	5.516	0.004
2	Sometimes I use a digital tool, e.g. a quiz, to check on students' progress	25.6(200)	18.5 (22)	28.2 (166)	16.2 (12)		
3	I use a variety of digital tools to monitor student progress	9.6(75)	12.6 (15)	9.5 (56)			
4	I systematically use a variety of digital tools to monitor student progress	2.8(22)	2.5 (3)	3.2 (19)	5.4 (4)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

The mean average score towards the evaluative statement 2 below asking students about data analysis processes that they use to support students requiring additional support was the highest for all the responses. Given the fact that the term "digital" did not appear in the evaluative statement teachers thought the question was addressing support measures they consider helping students who are lagging according to the focus group discussion. Again, the current infrastructure in use in schools, presence of non-working computers in the computer labs, limitations in the number of tablets and laptops available, and lack of regular internet service do not allow for a process of data analysis that would help teachers support students through digital channels.

2. I analyse all data available to me to timely identify students who need additional support							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	2.14	1.97	2.17	2.14		
0	These data are not available and/or it is not my responsibility to analyse them	7.5(59)	12.6 (15)	6.8 (40)	5.4 (4)	1.898	0.151
1	I only analyze academically relevant data, e.g. performance and grades	17.8(139)	23.5 (28)	16.6 (98)	17.6 (13)		
2	I also consider data on student activity and behavior to identify students who need additional support	38.2(299)	29.4 (35)	39.0 (230)	45.9 (34)		
3	I regularly screen all available evidence to identify students who need additional support	26.1(204)	23.5 (28)	27.3 (161)	20.3 (15)		
4	I systematically analyse data and intervene in a timely manner	10.4(81)	10.9 (13)	10.2 (60)	10.8 (8)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 16: Digital data analysis to develop additional student support

The response choice to the 3rd statement in the table below where the term "digital" is used made teachers choose more realistic options in their evaluation as 63.3% state

that they do not provide feedback in digital formats. If we add to this group those that only sometimes used digital ways – most teachers (84%) is accounted for. The percentage is event higher (86,2%) for the group of female teachers. The rest of the resulting with selections for options 3 and 4 (around 10% of the survey participants) who indicate that they use a variety of digital ways to provide feedback systematically presents an area for further pedagogical research in the specific teaching context of Albania.

3. I use digital technologies to provide effective feedback							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	1.37	1.29	1.39	1.34		
0	Feedback is not necessary in my work environment	6.3(49)	16.0 (19)	4.2 (25)	6.8 (5)	0.871	0.419
1	I do provide feedback to students, but not in digital format	63.3(495)	52.9 (63)	65.0 (383)	66.2 (49)		
2	Sometimes I use digital ways of providing feedback, e.g., automatic scores in online quizzes, comments or "likes" in online environments	20.5(160)	19.3 (23)	21.2 (125)	16.2 (12)		
3	I use a variety of digital ways of providing feedback	7.2(56)	10.1 (12)	6.5 (38)	8.1 (6)		
4	I systematically use digital approaches to provide feedback	2.8(22)	1.7 (2)	3.1 (18)	2.7 (2)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 17: Digital technologies and effective feedback

Training needs

Digital and online assessment of students enhances the learning experience and makes learning more dynamic. Developing training modules that incorporate techniques of digital assessment is crucial in the process of developing digital competences[18]. Assessment related training is somewhat natural as teachers are engaged in assessment processes all the time. Digital assessment is generally based on the following elements[19]:

- Online quizzes
- Essay questions
- Drag-and-drop activities
- Online interviews
- Dialogue simulations
- Online polls

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[18] For more information on the online assessment impacts see: https://jolt.merlot.org/vol8no3/kearns_0912.pdf.
[19] According to the following webpage: https://www.ispringsolutions.com/blog/8-ways-to-assess-online-student-learning

- Game-type activities
- Peer evaluation and review
- Forum posts

The contradictions that were part of the evaluation in the assessment area show that teachers would need training in at least two aspects of assessment. The first is related to the diversification of assessment in line with the competence-based curriculum in place in Albania that requires teachers to use all the assessments methods mentioned above anyways and to transfer them into digital environments. Teachers would have to master the different assessment techniques and mechanisms first and at a second stage transfer them to online environments. The second is related to digital assessment of student knowledge making use of available digital resources and digital means that students have in their possession including cellular phone devices and other smart devices. Initially this would require changes in the school regulations that prohibit use of cellular devices during classes.

 These trainings should be strongly aligned with the Ministry of Education and Sports as there are EU funded projects supporting modernization of assessment in education in Albania. Cooperation with this ministry is very essential as there are current rules and regulations in place do not allow for digital assessment of knowledge[20]. The alignment is important and should coincide with the process of digitalizing attendance and grading books used in schools as part of the process of the process of digitalizing the management of information in the pre-university system in Albania.

The proposed modules of training should precede or coincide with the technological developments in the field of teaching and learning as outlined in the National Education Strategy 2022-26 in which provisions are made to equip teachers with digital skills through the process of continuous and on-the-job trainings vis-à-vis processes of modernizing school digital infrastructure.

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[20] The beginning of the 2021-22 school year was marked by a protest of parents in Tirana, the capital of Albania, who demanded regular teaching classes for their children. They were against a plan of the Ministry of Education and Sports that shortened the teaching periods and introduced schooling in different shifts in order to comply with health limitations imposed by Covid-19 pandemics. See here for more information: https://www.reporter.al/2021/09/30/prinderit-kerkojne-shfuqizimin-e-vendimit-per-mesim-te-shkurtuar-dhe-me-turne/. Following these protests the decision was overturned including discontinuation of online teaching and learning activities.

Area 5: Empowering Learners

In the area of the survey dealing with empowerment of learners the focus was on digital inclusion of students and making education processes more personalized. The scores in this area are indicative of the lack of digital resources available for students and make investment in digital technologies in elementary and secondary education imperative. The statements related to accessibility and inclusion had a mean score of 1.77. The answer choices asked teachers to reflect on the processes through which they engage students with different needs (including disability and lack of digital devices and knowledge) in the digital process that take place during classes. Answer choices to the statement related to differentiation and personalization with a mean score of 1.76 are supposed to show how teachers individually follow progress of each student. Choices to the third statement related to active engagement of learners in class through digital technologies, scored 1.41 sought information regarding combination of digital technologies and pedagogic strategies that foster learner's active engagement, deep thinking, and creative expression.
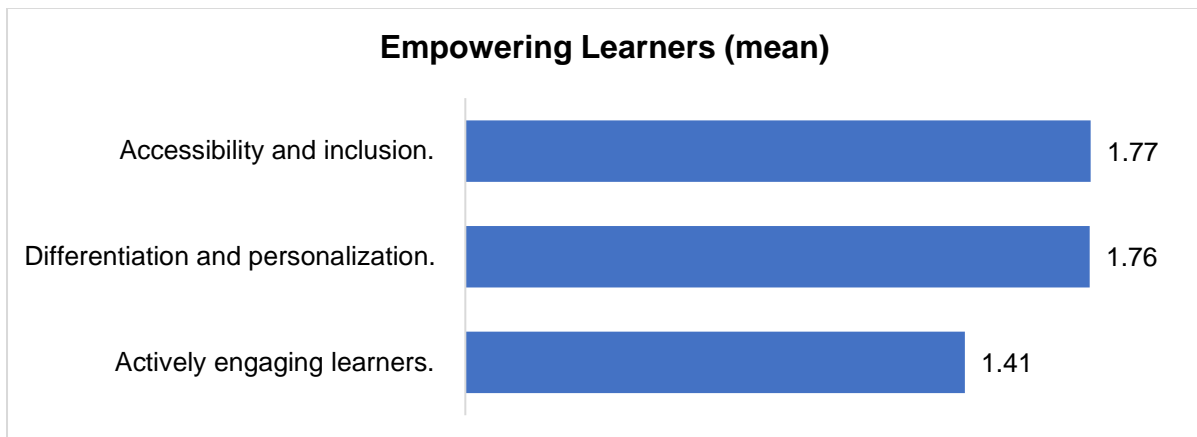
Figure 18: Mean values (0-4) of digital empowering of learners

Analysis of results

Looking at the selection of the responses that teachers have provided for this area of the survey, one can get the impression that they might have not been very aware that the survey is about digital technologies and processes and how they affect student empowerment. The contradictory responses to some of the statements that do not reflect the low level of digital infrastructure in schools are a clear indication of that. As 42.3% of the teachers have selected option 2 for the first statement in the table below it becomes even more evident that they are referring to a non-digital reality. Teaching culture in Albania is not one that expects teachers to develop their own assignments. In fact, they are expected to follow the curriculum and government guidelines strictly. In this case the teachers (22.5%) who have selected the first option (numbered 0) are closer to reality.

1. When I create digital assignments for students I consider and address potential digital problems e.g., equal access to digital devices and resources; interoperability and conversion problems; lack of digital skills							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	1.77	1.66	1.80	1.70		
0	I do not create digital assignments	22.5(176)	28.6 (34)	20.9 (123)	25.7 (19)	0.820	0.441
1	My students do not have problems with using digital technology	10.6(83)	10.9 (13)	10.7 (63)	9.5 (7)		
2	I adapt the task so as to minimize difficulties	42.3(331)	32.8 (39)	44.3 (261)	41.9 (31)		
3	I discuss possible obstacles with students and outline solutions	16.8(131)	21.8 (26)	16.0 (94)	14.9 (11)		
4	I allow for variety, e.g. I adapt the task, discuss solutions and provide alternative ways for completing the task	7.8(61)	5.9 (7)	8.1 (48)	8.1 (6)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 18: Addressing digital problems for students

The choices towards the second evaluative statement in the table below requiring information about personalized learning opportunities created through digital technologies tend to be more realistic. Although it is not yet very clear what kind of digital additional resources teacher refer their students to as per the high percentage of responses going for option 1 – providing students with recommendations for additional resources, the focus group discussion clarified that the teachers were considering offering students options to do research online and use video and internet materials to enhance classroom-based explanations. Digital resources in the Albanian language are limited and it is of interest to further investigate what kind of resources are teachers referring their students to besides what is offered in the Academy.al or MesoVet.al platforms.

2. I use digital technologies to offer students personalized learning opportunities e.g. I give different students different digital tasks to address individual learning needs, preferences, and interests							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	1.76	1.68	1.78	1.77		
0	In my work environment, all students are required to do the same activities, irrespective of their level	7.4(58)	11.8 (14)	5.9 (35)	12.2 (9)	0.339	0.713
1	I do provide students with recommendations for additional resources	52.8(413)	49.6 (59)	54.2 (319)	47.3 (35)		
2	I provide optional digital activities for those who are advanced or lagging behind	8.6(67)	8.4 (10)	8.5 (50)	9.5 (7)		
3	Whenever possible, I use digital technologies to offer differentiated learning opportunities	18.3(143)	19.3 (23)	18.7 (110)	13.5 (10)		

4	I systematically adapt my teaching to link to students' individual learning needs, preferences and interests	12.9(101)	10.9 (13)	12.7 (75)	17.6 (13)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 19: Digital technologies in use and personalized learning

Almost 65% of the teachers claim that the way they involve their students in the teaching and learning processes is not digital and this is a closer reflection of the school reality where digital technologies are limited. Those that engage students with digital media might account for vocational schools or those that are in possession of digital equipment distributed to students and schools during the pandemic lock-down.

3. I use digital technologies for students to actively participate in class							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	1.41	1.31	1.45	1.26		
0	In my work environment it is not possible to actively involve students in class	11.0(86)	15.1 (18)	10.0 (59)	12.2 (9)	2.216	0.110
1	I do involve students actively, but not with digital technologies	53.6(419)	52.1 (62)	53.0 (312)	60.8 (45)		
2	When instructing, I use motivating stimuli, e.g. videos, animations, cartoons	23.1(181)	20.2 (24)	24.3 (143)	18.9 (14)		
3	My students engage with digital media in my classes, e.g. electronic worksheets, games, quizzes	7.8(61)	11.8 (14)	7.3 (43)	5.4 (4)		
4	My students systematically use digital technologies to investigate, discuss and create knowledge	4.5(35)	0.8 (1)	5.4 (32)	2.7 (2)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 20. Digital technologies and active student participation

Training needs

Making digital learning inclusive empowers learners and makes them autonomous in their learning processes[21]. Teacher training related to learner empowerment enhances digital and media competences that students need for their digital journeys and research. Teachers through a training in this area should be able to

- use tools, and technologies to access both information and entertainment in digital formats in order to cope with the natural abilities that students have in this area
- develop the skills of critical thinking, analysis, and evaluation among students in order for them to become effective users of digital technologies and resources

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[21] Valdmane, L. & Zariņa, Sandra & Badjanova, Jelena & Iliško, Dzintra & Petrova, Mariana. (2020). EMPOWERING DIGITAL AND MEDIA LITERACY OF PRIMARY SCHOOL TEACHERS IN LATVIA. 4022-4029. 10.21125/edulearn.2020.1087.

- offer the practice of message composition and creativity in online environments
- develop the ability to engage in reflection and ethical thinking and
- promote active participation in the real social world through individual and collaborative efforts[22].

There is also a very clear training need that becomes evident from the evaluative responses to area 5 of the survey – the development of a training module that allows teachers to incorporate all students in digital learning and teaching processes. The focus should be twofold: students who have no or limited access to technologies and disabled students. Further developments in the area of digital learning empowerment should be considered at later stages and when digital divide has been narrowed and the digital infrastructure in schools is strengthened.

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[22] For more information see: https://eric.ed.gov/?id=EJ964255

Area 6: Facilitating Learner's Digital Competences

Learning and assessment in pre-university education in Albania is competence based. The curriculum in place allows for the integration of different assessment methods that have been agreed before in the curriculum. Digital development of education is high in the new education strategy and development of learners' digital competences is strongly related to that. The last area of the survey focusses on the work that teachers are doing to facilitate the process of digital competence development. Initially teachers were asked to evaluate information and media literacy and the mean score was 1.62. In this process they were asked to provide critical information regarding reliability and credibility of the online sources they used. In the evaluation of digital communication and collaboration teachers were asked to give their opinion on how resources they use and digital activities that they engage with increase communication, collaboration, and civic participation. The mean score was 1.65 in this category. In the field of digital content creation, the score was 1.90 and the teachers were asked to evaluate how students incorporate digital content in their learning activities and how they express themselves through digital means. In addressing responsible use of digital content, the notions of psycho-social wellbeing and digital safety the mean score was 1.66 and for the field of digital problem solving the mean score was 1.64. This last field requires students to be quite advanced in identifying and solving problems of technical nature and transfer technological knowledge to develop new situations.

Facilitating Learners' Digital Competence (mean)

- Digital content creation — 1.90
- Responsible use — 1.66
- Digital communication & collaboration — 1.65
- Digital problem solving — 1.64
- Information and media literacy — 1.62
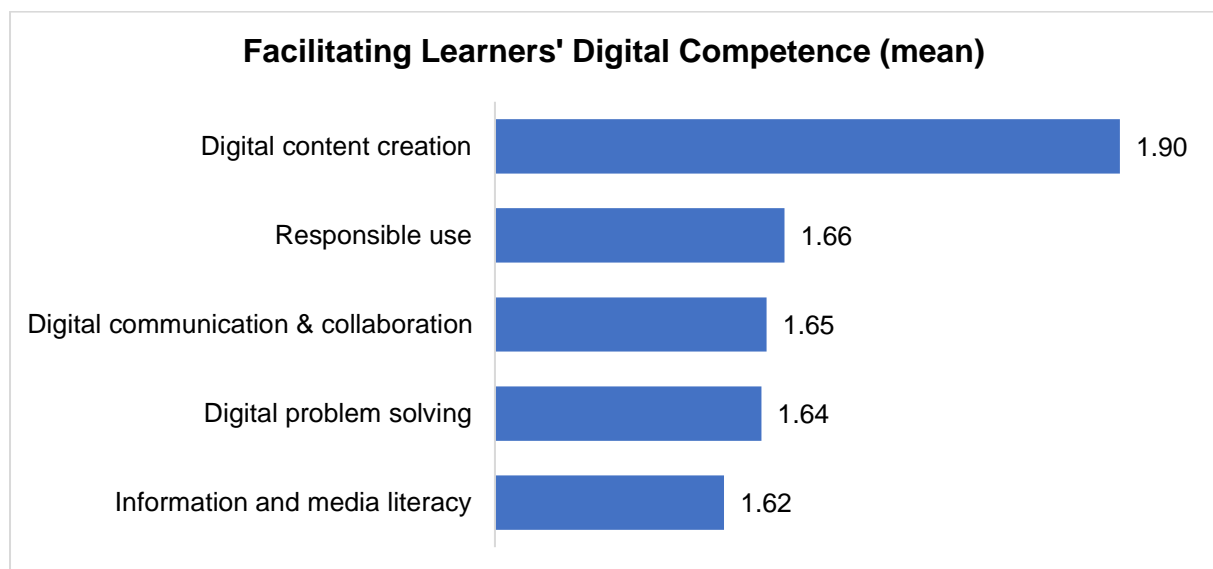
Figure 19: Mean scores (0-4) for the facilitation of the digital competences among learners

Analysis of results

Over half of the participants in the survey selected the first two options to respond to the first evaluative statement in the table below. Teachers, based on their selection, did not have the time or are equipped to provide students with the means / skills to assess digital information for reliability or to detect bias in the digital media sources.

On the other hand, those that selected option 3 are a good indication that there is a potential group of teachers who based on their knowledge could support peer-to-peer exchanges online through the Akademi.al portal to share their experiences in assessing digital information for reliability.

1. I teach students how to assess the reliability of information and to identify misinformation and bias							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	1.62	1.59	1.64	1.47		
0	This is not possible in my subject or work environment	11.0(86)	16.0 (19)	10.0 (59)	10.8 (8)	0.832	0.436
1	I occasionally remind them that not all online information is reliable	46.3(362)	39.5 (47)	47.2 (278)	50.0 (37)		
2	I teach them how to discern reliable and unreliable sources	17.3(135)	16.0 (19)	16.8 (99)	23.0 (17)		
3	I discuss with students how to verify the accuracy of information	21.1(165)	26.9 (32)	20.9 (123)	13.5 (10)		
4	We comprehensively discuss how information is generated and can be distorted	4.3(34)	1.7 (2)	5.1 (30)	2.7 (2)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 21: Teaching students how to assess information reliability

Selection of choices to respond to the statement in the table below are also indicative of the fact that little engagement with digital assignments takes place during class or with outside audiences. In fact, regulations in the Albanian school system are very strict regarding guest teachers and invitees during the classes and the process of getting the permits is rather strict. The high level of response for option 4 at 12% might be an indication of the presence of technology in schools provided to facilitate teaching during COVID-19 lockdown.

2. I set up assignments which require students to use digital means to communicate and collaborate with each other or with an outside audience							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	1.65	1.50	1.69	1.50		
0	This is not possible in my subject or work environment	18.0(141)	26.1 (31)	16.6 (98)	16.2 (12)	1.809	0.165
1	Only on rare occasions are my students required to communicate or collaborate online	30.6(239)	26.1 (31)	30.4 (179)	39.2 (29)		
2	My students use digital communication and cooperation mainly among each other	32.2(252)	27.7 (33)	32.9 (194)	33.8 (25)		
3	My students use digital ways to communicate and to cooperate with each other and with an external audience	7.2(56)	11.8 (14)	7.1 (42)	0		

4	I systematically set assignments that allow students to slowly expand their skills	12.0(94)	8.4 (10)	12.9 (76)	10.8 (8)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 22: Digital assignments and student collaboration

In selecting the responses for statement 3 below related to assigning work based on digital creation it becomes evident that teachers were not very actively involved in the process of assigning creation of digital content and that students were developing digital content on their own based on responses 0 – 2 making up 2/3rd of all respondents. The mean value for the NI gender group of teachers, 1.68, represents a statistically significant difference in results made more evident in the selection of the option 4.

3. I set up assignments which require students to create digital content e.g., videos, audios, photos, digital presentations, blogs, wikis…							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	1.9	1.73	1.96	1.68		
0	This is not possible in my subject or work environment	14.5(113)	19.3 (23)	13.2 (78)	16.2 (12)		0.036
1	This is difficult to implement with my students Sometimes, as a fun activity	23.9(187)	22.7 (27)	23.4 (138)	29.7 (22)		
2	My students create digital content as integral part of their study	27.9(218)	30.3 (36)	27.5 (162)	27.0 (20)		
3	This is an integral part of their learning and I systematically increase the level of difficulty to further develop their skills	24.7(193)	21.0 (25)	25.5 (150)	24.3 (18)	3.343	
4	I systematically increase the level of difficulty to further develop their skills	9.1(71)	6.7 (8)	10.4 (61)	2.7 (2)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 23: Students' assignments and digital content creation

Almost 55% of the teachers with the selection of their response (0-1) to the 4th evaluative statement in the table below show that online safety and responsibility is neither a clearly defined process nor a prerequisite for digital class involvement in the Albanian school system. While projects and policy ideas to regulate internet for young people has been discussed specific teaching units dealing with online safety are yet to become part of the teaching curriculum.

4. I teach students how to behave safely and responsibly online							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	1.66	1.69	1.67	1.53		
0	This is not possible in my subject or work environment	11.4(89)	13.4 (16)	10.5 (62)	14.9 (11)	0.586	0.557

1	I inform them that they have to be careful with relaying personal information online	43.1(337)	39.5 (47)	44.1 (260)	40.5 (30)		
2	I explain the basic rules for safely & responsibly acting in online environments	21.4(167)	21.0 (25)	20.7 (122)	27.0 (20)		
3	We discuss and agree on rules of conduct	16.6(130)	16.8 (20)	17.1 (101)	12.2 (9)		
4	I systematically develop my students' use of social rules in the different digital environments we use	7.5(59)	9.2 (11)	7.5 (44)	5.4 (4)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 24: Teaching student safe and responsible online behaviour

84% of the respondents with their response choices (0-2) to the statement 5 in the table below have clearly shown that creative use of digital technologies in the education system in Albania and especially in the schools that have been under reconstruction of constructed new is a process that belongs to the future.

5. I encourage students to use digital technologies creatively to solve concrete problems e.g. to overcome obstacles or challenges emerging in the learning process							
		Total	Male	Female	NI	F	P
		%(N)	%(N)	%(N)	%(N)		
Scale	Mean Values	1.64	1.57	1.67	1.55		
0	This is not possible with my students, in my work environment	17.5(137)	22.7 (27)	16.6 (98)	16.2 (12)	0.706	0.494
1	I rarely have the opportunity to foster students' digital problem solving	21.5(168)	19.3 (23)	21.1 (124)	28.4 (21)		
2	Occasionally, whenever an opportunity arises	45.0(352)	41.2 (49)	46.2 (272)	41.9 (31)		
3	We often experiment with technological solutions to problems	11.3(88)	11.8 (14)	11.2 (66)	10.8 (8)		
4	I systematically integrate opportunities for creative digital problem solving	4.7(37)	5.0 (6)	4.9 (29)	2.7 (2)		
	Total	100(782)	100 (119)	100 (589)	100 (74)		

Table 25. Student digital creativity and problem solving.

Training needs

The opportunities for both teachers and students to develop their digital competences is tremendous and there is quite a lot to be developed. As this area of the survey deals with a rather advanced process relating students' independent learning with their online safety the training recommendation is aligned with the second category. There is a lot to be done in Albania to address issues related to online safety, cyber-bullying, and internet security. A training module focusing on these areas and addressing all the age groups of students should become a mandatory requirement before teachers

consider online teaching and learning. Another training module to be developed could address issues related to effective use of digital competences and resources available to create digital content. Teachers need to be trained on how to develop content related to their courses initially and store it properly online and then they can work with their students to co-develop content further.

Making use of digital communication and collaboration the concept of homework can be entirely digitized moving away from the current practice of having students submit printouts of their digital work to be stored in the respective student folders. Teachers need to be trained on how to develop digital folders for their students and how to move the process of homework submission entirely online. There are very simple and free resources that teachers can start using right away to develop an online presence for their teaching and their courses including Akademi.al resources. Training in this area requires a certain level of media literacy and pre-conditions defining the levels of media literacy required to be able to engage in digital content creation need to be in place and developed using concepts of non-formal education.

Digital teaching competence at the end of the survey.

The survey ended up with the same question that is started, asking teachers to re-evaluate themselves regarding the level of digital competences they possessed following the completion of the survey and gaining more insight in the in-depth description of each competence area while teachers were engaged in filling out the survey.

Teachers have a higher level of competence in the competence areas of professional engagement and working with digital resources. They have scored lowered in the competence area of digital assessment.

Teacher's digital competences summary (mean)
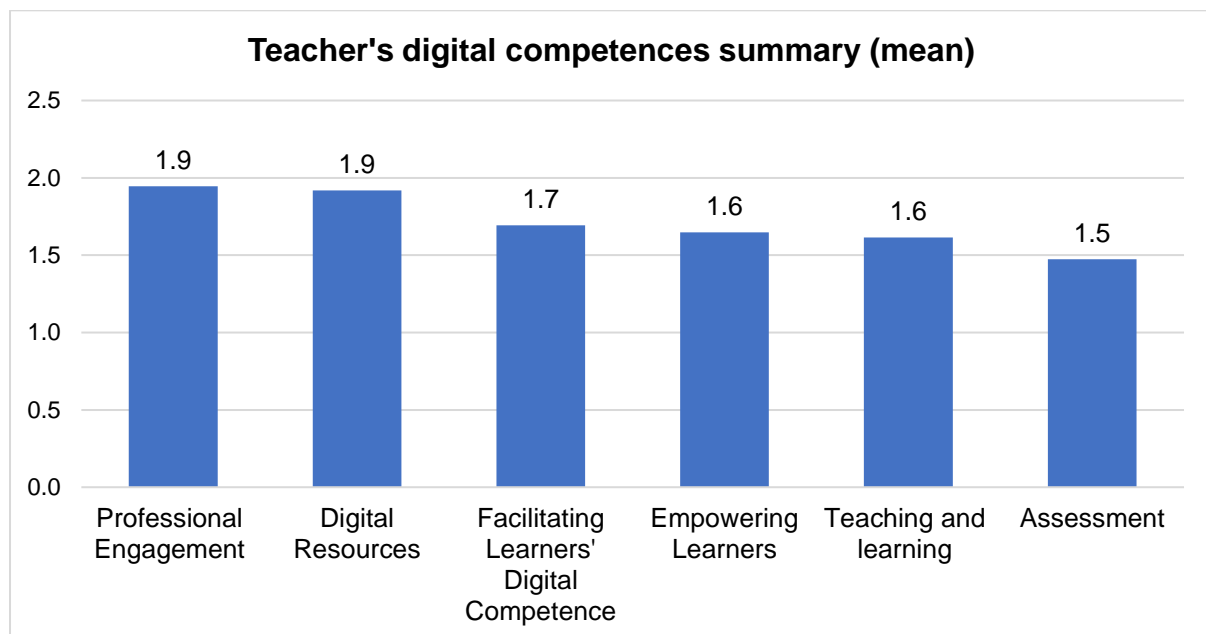
Figure 20: Average scores (0-4) for digital competences of teachers

When compared by gender we see small differences in mean values. We checked through ANOVA analysis for statistical significance of the mean differences, and we found that there were statistical differences in three of the dimensions of teachers' digital competences in professional engagement, digital resources and teaching and learning. Women have higher mean value of professional engagement, and the difference is statistically significant when compared with the two other groups, men and 'prefer not to say' ($F=4.419$, $p=0.012$). in digital resources we see that the 'prefer not to say' group have lower mean values meaning that they are less likely to use digital resources ($F=6.043$, $p=0.002$) and there were no significant differences between women and men. The same results we obtained for teaching and learning dimension where women and men share the same mean value while the 'prefer not to say' group have lower mean value ($F=3.217$, $p=0041$).
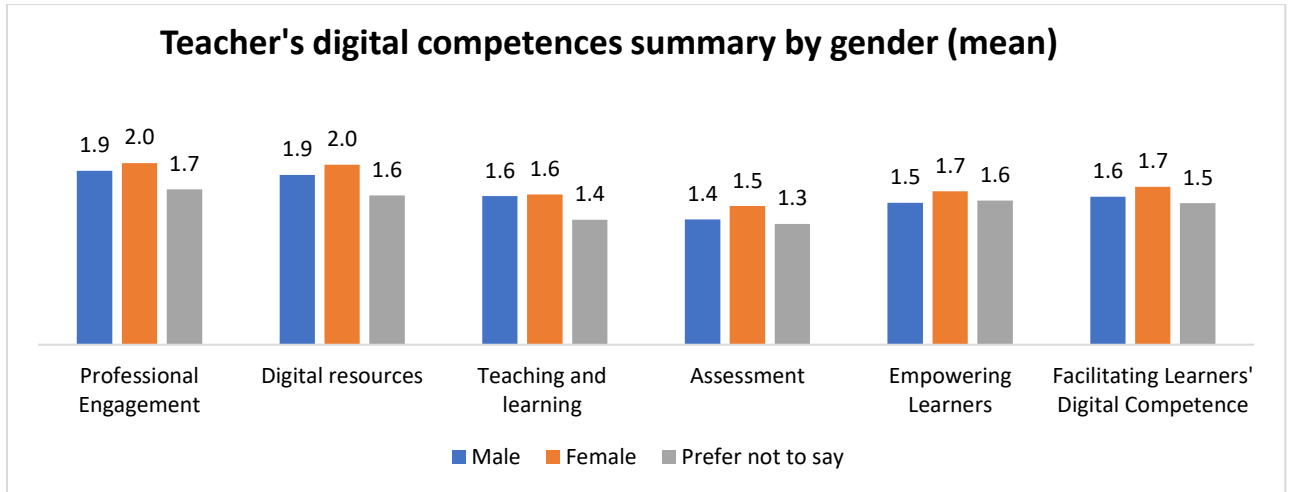
Figure 21: Average scores (0-4) for digital competences of teachers by gender (%)

When the average scores are compared as in the figure below it becomes evident that there are changes in the way teachers engaged with this self-assessment tool measuring their digital teaching competences. As the chart below indicates, less teachers have placed themselves at the A1 level after survey completion with the percentage going down from 12.7% before the survey to 11.2% after the survey completion. The opposite is true for the A2 level of competences where the percentage has increased from 30.4% to 36.7% at the end of the survey. For the rest of the competences B1 to C2 there is a declining trend when before and after assessment of digital competences is compared and reduced by almost half for the C2 level of competence. The lowering trend marking the comparison of the higher competence levels show that teachers not only gained insight of the survey process, but they also reflected on the review of the competences they thought they possessed. The compared results are also indicative regarding the training process to be developed which must aim to train teachers with basic digital skills that can help them navigate in a teaching environment that is becoming more hybrid and mixed.

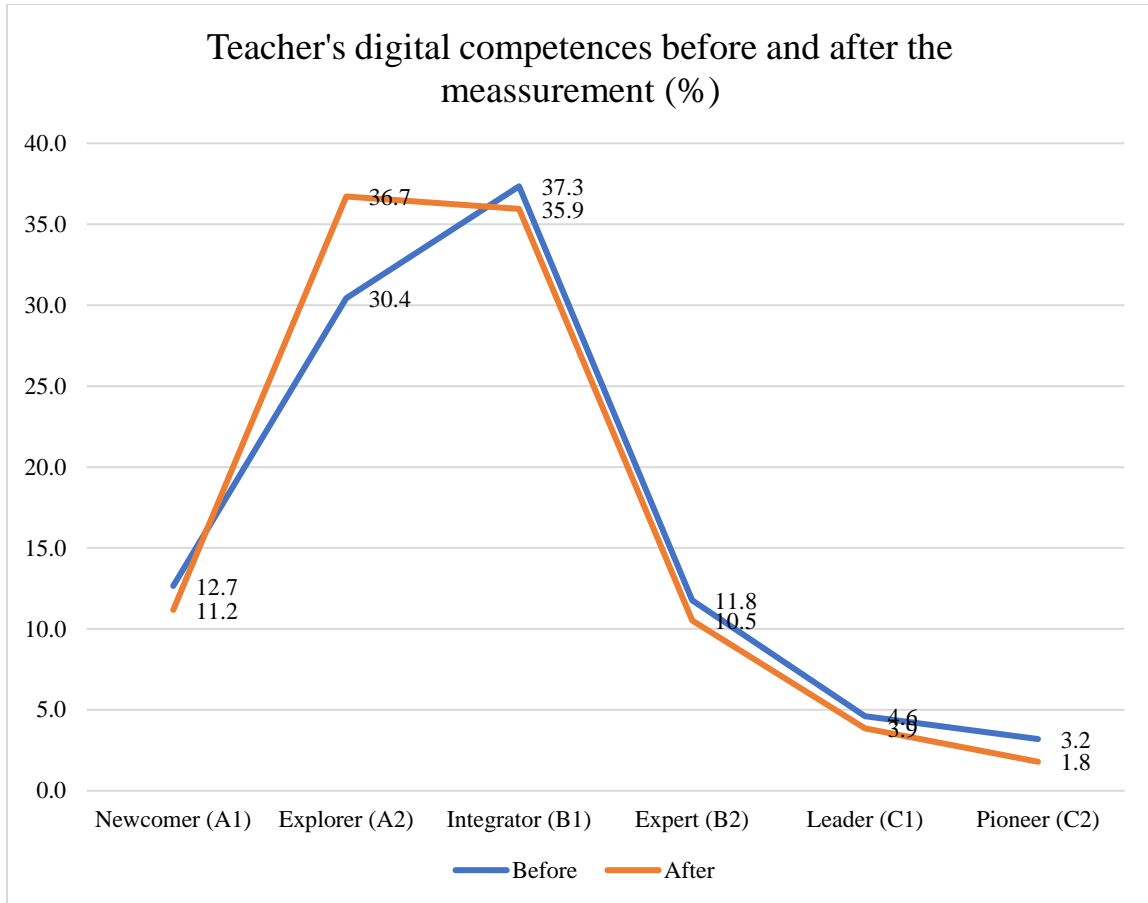*Figure 22: Comparing self-assessment of digital competences of participating teachers in the survey at the start and finish of the process of filling out the survey.*

Teacher Digital Competence Analysis with Big Data

Data categorization based on the DigCompEdu Framework

The teachers who participated in the survey also used Akademi.al, during the period September 2020 - July 2021. As a means of comparing the real-time behavioural data and results from the platform to the results of the study, different interaction events have been categorized for each competence area of the DigCompEdu Framework.

Classification of the competency levels according to the data intervals

The minimum pass classification for each of the framework levels is determined based on the overall analysis of the results of n=35,688 teachers enrolled in the platform from m=1229 schools. Multiple data points have been determined to evaluate the minimum and maximum of the mean point according to the 6 levels.

Area 1: Professional Engagement

The effectiveness of digital communication tools by teachers was analysed by looking at the number of posts and comments made in virtual classes created by them on the Akademi.al platform that conveys their engagement in a structured and well-thought manner.

Level	Min. of mean	Max. of mean
A1	9.5	39
A2	40	63
B1	64	78
B2	79	90
C1	91	98
C2	99	105

Table 26: Number of comments and posts made by teachers on their virtual classes (comments per teacher).

Area 2: Digital Resources

In order to identify the proficiency of teachers in identifying and assessing suitable online educational resources, the algorithms have queried the number of video lectures linked to YouTube shared in the virtual class as well as from Akademi.al.

Level	Min. of mean	Max. of mean
A1	10	15
A2	16	22
B1	21	28
B2	29	34
C1	34	37
C2	38	40

Table 27: Number of Youtube video lectures shared on virtual classes (videos shared per teacher).

Area 3: Teaching and Learning

To assess teachers' capabilities in planning, monitoring and effectively implementing the use of digital technologies in teaching and learning, we have aggregated all the actions taken by the teacher including the number of posts within the content builder of the virtual classroom (content, homework, quizzes), features used by difficulty, and class engagement in terms of student replies.

Level	Min. of mean	Max. of mean
A1	2	42
A2	43	63
B1	64	78
B2	79	91
C1	92	96
C2	97	101

Table 28: Number of students replies within the virtual classes (per teacher).

Area 4: Assessment

The number of homework and assignments the teachers have shared and graded in their virtual classes has been inquired and analysed to develop a more in-depth understanding of whether the teachers have integrated digital technologies into traditional assessment strategies.

Level	Min. of mean	Max. of mean
A1	0.8	3.2
A2	3.3	5.3
B1	5.4	6.4
B2	6.5	7.2
C1	7.3	7.8
C2	7.8	8

Table 29:Number of assignments shared by the teacher (per teacher)

Area 5: Empowering Learners

Akademi.al has a stock of 3,000 free video lessons adjusted for students with disabilities, so we have analysed the number of videos shared with the learners to show that the teacher is enhancing accessibility and inclusion in the classroom.

Level	Min. of mean	Max. of mean
A1	1	1.5
A2	1.6	1.9
B1	2	2.5
B2	2.6	3
C1	3.1	3.3
C2	3.4	3.6

Table 30: Number of accessibility videos shared

Area 6: Facilitating Learners' Digital Competence

To build a better understanding of the teacher's efforts to accommodate learners, in terms of their digital literacy and competence, we have looked at the number of learners enrolled in virtual classrooms, compared to the number of invitations sent to students.

Level	Min. of mean	Max. of mean
A1	1.5	3
A2	3.1	3.8
B1	3.9	4.4
B2	4.5	4.9
C1	5	5.3
C2	5.4	5.6

Table 31: Difference of the number of invites sent versus learners enrolled in virtual classes.

Big Data Analysis Results per school

Nr	Municipality	Education Facility	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6
1	Durrës	9 - year School "14 Nëntori"	B1	A1	A1	A1	A1	C1
2	Tirana	9 - year School "26 Nëntori"	A2	B1	A1	A2	A1	B1
3	Kurbin	9 - year School & Kindergarten "28 Nëntori"	A1	A1	A1	A1	A1	B2
4	Kavaja	9 - year School "3 Dëshmorët"	A2	A1	A1	A1	A1	C1
5	Tirana	Professional High School "Asim Vokshi"	A1	A1	B1	B1	A1	B2
6	Vora	9 - year School Bërxullë	A1	A1	A1	A1	A1	B2
7	Kurbin	9 - year School & Kindergarten "Cub Çapani"	A1	A1	A1	A1	A1	A1
8	Kurbin	9 - year School & Kindergarten "Demokracia"	A1	A1	A1	A1	A1	B2
9	Durrës	High School "Dhosi Liperi"	A1	B1	A1	B1	A1	B1
10	Kamza	9 - year School "Dom Nikollë Kaçorri"	A1	A1	A1	A1	A2	B1
11	Durrës	9 - year School & Kindergarten "Eftali Koçi"	B1	A1	A1	A1	A1	C1
12	Tirana	9 - year School "Emin Duraku"	B2	A2	A2	A1	A1	C1
13	Kavaja	9 - year School & Kindergarten "Fiqiri Kurti"	B2	A1	A1	A1	A1	B2
14	Lezha	9 - year School "Fran Ivanaj"	A1	A1	A1	A2	B1	B1
15	Durrës	High School "Gjergj Kastrioti"	B1	A1	B1	A1	A1	B1
16	Lezha	9 - year School "Gjergj Kastrioti"	A1	A1	A1	A1	A1	C1
17	Kurbin	9 - year School & Kindergarten "Gjokë Elezi"	A1	A1	A1	A1	A1	C1
18	Kruja	Joint School "Haxhi Qira"	A1	A1	A1	A1	A1	B2
19	Kamza	9 - year School "Ibrahim Basha"	A2	A1	A1	A1	A1	B2

Nr	Municipality	Education Facility	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6
20	Durrës	Joint School "Ismet Nanushi"	A2	A1	A2	A1	A1	C1
21	Kavaja	9 - year School Karpen	A2	A1	A1	A1	A1	B1
22	Kruja	9 - year School "Korb Muça"	A1	A1	A1	A1	A1	B2
23	Kavaja	9 - year School "Mehmet Babamusta"	A2	A1	A1	A1	A1	C1
24	Tirana	9 - year School "Musine Kokalari"	A2	A1	A2	A1	A1	B2
25	Tirana	High School "Myslym Keta"	B1	A1	B1	B1	A1	B2
26	Durrës	High School "Naim Frashëri"	B1	A1	A2	A1	A1	B2
27	Durrës	High School "Olsi Lasko"	A1	A1	A1	A1	A1	B1
28	Kruja	Joint School "Ramazan Karaj"	A1	A1	A1	A2	A1	B1
29	Shijak	9 - year School "Rilindja"	A1	A1	A1	A1	A1	B2
30	Kruja	9 - year School "Gjergj Kastrioti"	A1	A2	A1	A1	B1	B1
31	Kruja	9 - year School & Kindergarten "Shaqir Lleja"	A1	A2	A1	A2	A1	A2
32	Kruja	9 - year School "Sherif Dervishi"	A1	A1	A1	B1	A1	B1
33	Kruja	High School "Skënderbeu"	A1	A1	A1	A2	B1	A2
34	Kamza	9 - year School & Kindergarten "Tahir Sinani"	A2	A1	A1	A1	A1	B2
35	Vora	9 - year School Vorë	A1	A1	A2	A1	A1	C1
36	Tirana	9 - year School "Xhezmi Delli"	A1	A1	A1	A1	A1	B2
37	Rrogozhina	9 - year School "Xhorxh Sorros"	A1	A1	A1	A1	A1	B2
38	Rrogozhina	9 - year School Kryevidh	A1	A1	A1	A1	A1	A2
39	Rrogozhina	9 - year School Rreth-Greth	A2	A2	A1	A1	A1	A2
40	Rrogozhina	9 - year School & Kindergarten Vilë Bashtovë	A1	A1	A1	A1	A1	A1

Table 31: Big Data Analysis Results per school

The Big Data analysis seems to indicate that most teachers participating in this survey belong to the A1 – B2 categories as well. Both the data for each area and the summarized data for the schools show more variability and differences in the number of responses measured in the lower levels corresponding to A1 – B2 levels. These data also correlate with the survey data regarding the first two areas, professional engagement, and digital resources. The number of positive comments and the number of video lectures are quite indicative elements of digital engagement that took place among teachers and students. These numbers go in decline in the areas of assessment, learner empowerment and learner digital competence, again coinciding with the lower levels of self-evaluation that teachers included in their comments towards evaluative statements in the survey.

Conclusions

Education system in Albania is expected to experience a digital transformation based on the National Education Strategy 2022- 26 and the Digital Agenda Strategy of the same period. In addition to the development of the curriculum, special importance will be given by the government to the process of teacher training and the setting up of the Technology Laboratories for Teaching to create the necessary conditions for successful implementation of digital transformation of education. Training of teacher and educators will commence with introductory workshops to computer science and continue with more structured training throughout the school year. The selection of teachers and educators participating in the digital trainings will be based on (i) work experience and continuity in the teaching profession, (ii) motivation, and (iii) pedagogical skills.

The technological labs for teaching are expected to become functional in all institutions of education and equipped with updated technology. These labs are expected to guarantee continued access to online activities and courses for a standard class size and generally allow activities and courses on coding, which require the use of internet, personal computers and/or other equipment.

The impact of COVID-19 pandemics and the 2019 earthquakes have had a lasting impact on the education process. According to a World Bank report cited in the Albanian online press[23] reviewing education in the Western Balkans notes that 1 in 10 students' families in the Western Balkans do not have a computer, a number that goes 28% of the families in Albania. Issues related to IT ownership and its use in education is problematic. 63% of Albanian students have limited access to computers and this is termed as educational poverty.

In this situation and following on the analysis provided based on survey and big-data assessment development of effective training courses to fill the void created until the new strategies come into force is important and Akademi.al seems in a favourable position to provide teacher training for digital teaching competence. As already mentioned, cooperation with the MoES is essential to accredit the training program / modules so that the teachers can have the trainings officially recognized. On the other hand, this cooperation would ensure coordination with upcoming activities related to the implementation of the education and digital strategies.

Digital Teaching Competences

As it becomes evident in the graph below teachers have self-evaluated themselves in the A2 – B1 level of competences. Trainings should take this into consideration and provide teachers with opportunities to expand on the knowledge that they have already accumulated, making the need for trainings that allow personalization obvious and

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[23] https://faktoje.al/mesimi-online-nje-deshtim-sipas-komunitetit-masr-anulon-publikimin-e-sondazheve/

important for progress in digital teaching competence development. Trainings should also take into consideration demographic factors and geographical ones especially in terms of proximity to continuous internet and digital infrastructure that is more available in urban settings.
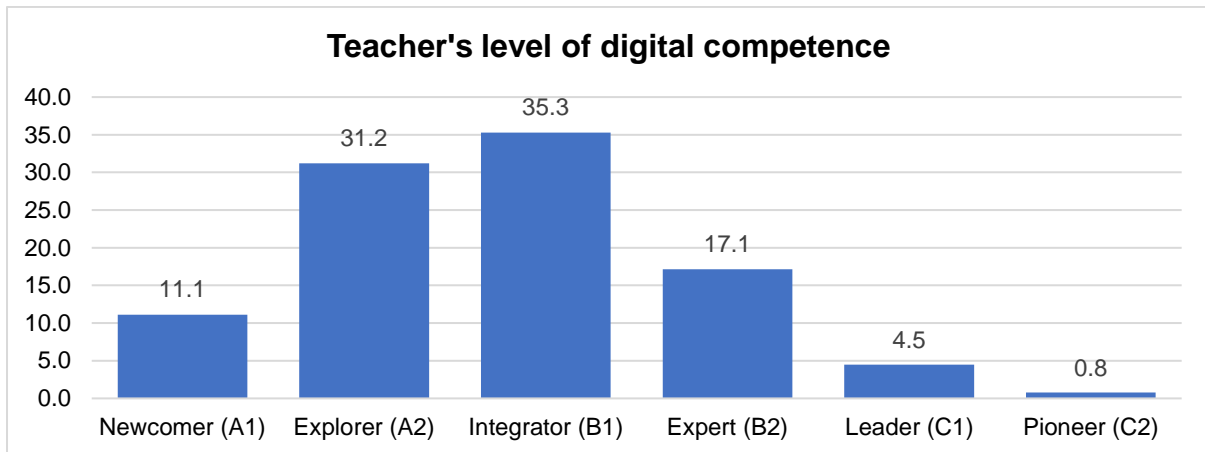

Figure 23: Teacher level of digital competence

Digital Teaching Training Needs

With regards to the six areas of the survey the trainings are expected to provide skills and competence development as follows:

Survey Area	Digital Teaching Training Modules Proposals
Professional Engagement	• A training module dealing with the basic concepts of digital technologies in use during the teaching process combined with the selection of the most effective digital methods of digital communication. • Trainings about effective use of digital communication tools besides email and WhatsApp connecting communication with the curriculum and targeting the post-elementary level of education. • Teaching specializations need be considered when grouping the teachers for training vis-à-vis group subjects and grade categories used including: - Elementary school teaching - Math and sciences - Social sciences - Albanian language and literature - Foreign Languages - Life sciences - Sports and physical training - Arts and crafts.
Digital Resources	• How to use digital resources, fair use of free and open materials and copyrighted materials

Survey Area	Digital Teaching Training Modules Proposals
	• Digital presentation skills • Copyright for regular and online teaching materials.
Teaching and Learning	• Training module on hybrid methods of teaching and learning incorporating in-class and online resources • Using digital technologies to produce personal teaching and learning materials • regular training in digital teaching and in developing cooperative modes of learning using online teaching platforms
Assessment	• Training module on the techniques of digital assessment • Training module on the diversification of online assessment methods • Training module on digital assessment of student knowledge making use of available digital resources and digital means that students have in their possession including cellular phone devices
Empowering Learners	• Training module on learner empowerment • Training module that allows teachers to incorporate all students in digital learning and teaching processes
Facilitating Learners' Digital Competence	• Training module on online safety, cyber-bullying, and internet security • Training module addressing issues related to effective use of digital competences and resources available to create digital content. • Teachers need to be trained on how to develop digital folders for their students and how to move the process of homework submission entirely online.

Table 32: Training modules according to survey area

Annex 1 – Six levels of digital competences according to DigCompEdu

The six levels[24] are:

Newcomer (A1): Newcomers are aware of the potential of digital technologies for enhancing pedagogical and professional practice. However, they have had very little contact with digital technologies and use them mainly for lesson preparation, administration, or organizational communication. Newcomers need guidance and encouragement to expand their repertoire and to apply their existing digital competence in the pedagogical realm.

Explorer (A2): Explorers are aware of the potential of digital technologies and are interested in exploring them to enhance pedagogical and professional practice. They have started using digital technologies in some areas of digital competence, without, however, following a comprehensive or consistent approach. Explorers need encouragement, insight, and inspiration, e.g., through the example and guidance of colleagues, embedded in a collaborative exchange of practices.

Integrator (B1): Integrators experiment with digital technologies in a variety of contexts and for a range of purposes, integrating them into many of their practices. They creatively use them to enhance diverse aspects of their professional engagement. They are eager to expand their repertoire of practices. They are, however, still working on understanding which tools work best in which situations and on fitting digital technologies to pedagogic strategies and methods. Integrators just need some more time for experimentation and reflection, complemented by collaborative encouragement and knowledge exchange to become Experts.

Expert (B2): Experts use a range of digital technologies confidently, creatively, and critically to enhance their professional activities. They purposefully select digital technologies for particular situations and try to understand the benefits and drawbacks of different digital strategies. They are curious and open to new ideas, knowing that there are many things they have not tried out yet. They use experimentation as a means of expanding, structuring, and consolidating their repertoire of strategies. Experts are the backbone of any educational organization when it comes to innovating practice.

Leader (C1): Leaders have a consistent and comprehensive approach to using digital technologies to enhance pedagogic and professional practices. They rely on a broad repertoire of digital strategies from which they know how to choose the most appropriate for any given situation. They continuously reflect on and further develop

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[24]. DigCompEdu, pg.30

their practices. Exchanging with peers, they keep updated on new developments and ideas. They are a source of inspiration for others, to whom they pass on their expertise.

Pioneer (C2): Pioneers question the adequacy of contemporary digital and pedagogical practices, of which they themselves are Leaders. They are concerned about the constraints or drawbacks of these practices and driven by the impulse to innovate education even further. Pioneers experiment with highly innovative and complex digital technologies and/ or develop novel pedagogical approaches. Pioneers are a unique and rare species. They lead innovation and are a role model for younger teachers.

Annex 2 – Schools by municipality and number of teachers per school

Municipality	Durrës
Professional High School "Hysen Çela"	34
High School "Gjergj Kastrioti"	24
High School "Naim Frashëri"	22
High School "Olsi Lasko"	19
Professional High School "Bernardina Qerraxhi"	17
9 - year School & Kindergarten "Eftali Koçi"	16
9 - year School "14 Nëntori"	9
High School "Dhosi Liperi"	2
Joint School "Ismet Nanushi"	2
	145

Municipality	Kavaja
9 - year School "Mehmet Babamusta"	16
9 - year School Karpen	15
9 - year School & Kindergarten "Fiqiri Kurti"	10
9 - year School "3 Dëshmorët"	17
Professional High School "Charles Teleford Erikson"	9
	67

Municipality	Kruja
Joint School "Haxhi Qira"	18
Joint School "Ramazan Karaj"	17
9 - year School "Sherif Dervishi"	6
High School "Skënderbeu"	4
9 - year School "Gjergj Kastrioti", Bilaj	4
9 - year School "Korb Muça"	3
	52

Municipality	Kurbin
9 - year School & Kindergarten "Gjokë Elezi"	18
9 - year School & Kindergarten "28 Nëntori"	11
9 - year School & Kindergarten "Cub Çapani"	2
9 - year School & Kindergarten "Demokracia"	1
	32

Municipality	Lezha
9 - year School "Gjergj Kastrioti"	11
9 - year School "Fran Ivanaj", Ishull Shëngjin	6
	17

Municipality	Shijaku
9 - year School "Rilindja"	9
	9

Municipality	Rrogozhina
9 - year School & Kindergarten Vilë Bashtovë	7
9 - year School Kryevidh	2
9 - year School Rreth-Greth	2
9 - year School "Xhorxh Sorros"	3
	14

Municipality	Vora
9 - year School Vorë	25
	25

Municipality	Kamza
9 - year School "Ibrahim Basha"	24
9 - year School & Kindergarten "Tahir Sinani"	15
9 - year School "Dom Nikollë Kaçorri"	9
	48

Municipality	Tirana
9 - year School "Emin Duraku"	23
9 - year School "Musine Kokalari"	16
High School "Myslym Keta"	13
9 - year School "26 Nëntori"	8
Professional High School "Asim Vokshi"	7
9 - year School "Xhezmi Delli"	3
	70