DIGITAL LEARNING FOR SOCIAL INCLUSION

NEED ANALYSIS RESEARCH ON EDUCATIONAL INNOVATION AND DIGITAL SKILLS DEVELOPMENT IN SCHOOL CURRICULA IN THE COVID-19 AND POST-COVID-19 ERA

BET! INTELLECTUAL OUTPUT 1

EU REPORT

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LIST OF ABBREVIATIONS

ANQEP	Agência Nacional para a Qualificação e o Ensino Profissiona (=”National Agency for Qualification and Professional Education” in Portuguese)
ART.	Article
AT	Advanced Technologies
CTI	Computer Technology Institute and Press – Greece
CRC	Convention of the Rights of the Child
DIGICOMPEDU	European Framework for the Digital Competence of Educators
DCE	Digital Citizenship Education
DGE	Direção-Geral de Educação (=”General Direction of Education” in Portuguese)
DGII	Directorate General of Democracy
E.G.	exempli gratia (= “for example" in Latin)
EEPEK	Epistimoniki Enosi gia tin Proothisi tis Ekpaideutikiw Kainotomias (=”Scientific Accosiation for the Promotion of Educational Innovation" in Greek)
ENEC	Estratégia Nacional de Educação para a Cidadania (= “National Strategy for Citizenship Education” in Portuguese)
EU	European Union
FTTC	Fiber to the Cabinet
FTTH	Fiber up to the Home
GB	Gigabytes
GCE	Global Citizenship Education
ICT	Information Communication Technologies
IEP	Institute of Educational Policy
I.E.	Id est (="that is" in Latin)

LAN	Local Area Network
MBP	Megabits per second
MOFERA	Ministry of Education and Religious Affairs of Greece
NGO	Non-Governmental Organization
NO.	Number
NQF	National Qualification Framework
OECD	Organisation for Economic Co-operation and Development
OER	Open Educational Resources
PEI	Piani Educativi Individualizzati (="Individualized Educational Plans" in Italian)
PDP	Personalized Didactic Plan
PISA	Programme for International Student Assessment
RAN	Radicalisation Awareness Network
SDG	Sustainable Development Goals
UGC	User Generated Content
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
VR	Virtual Reality

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ABSTRACT

This report presents the results of the BET! Need analysis research on educational innovation and digital skills development in school curricula in the COVID-19 and Post COVID-19 era on an EU level, elaborating on the National Reports drafted for Italy, Greece, Romania, and Portugal. In this context the BET! Research attempts to shed light on the impact of COVID 19 into the educational systems, teacher competence frameworks, formative needs and training habits in the field, digital education approaches and practices, relations between digital technologies and teaching and vulnerable students' inclusion, good practices, and policies in the field. The research was comprised of desk research, an online questionnaire with the participation of 515 educators and in-depth interviews with 17 stakeholders. The results of the research highlighted the most frequent challenges faced by teachers and vulnerable students in the transition to distance learning. The use of digital technologies to enhance inclusion, personalisation and learners' active engagement came up as the most important skills area in the field of digital education for teachers and the skill area most of them would like to improve. Furthermore, even though more than half of them had participated in a training on the use of digital technologies in teaching and education during the last year, the findings with regards to teacher preparedness to use digital tools in education and training were mixed. Regarding teacher training preferences, the majority showed a preference for an online format. The use of digital tools in education was found to be widespread and participating teachers had a positive attitude towards their use. Opportunities and challenges on the use of digital tools in education were also identified and the relation between digital education and vulnerable students' inclusion was addressed. Finally good practices and policies that exist in the field at both national and European level are presented.

INTRODUCTION

The structure of this report follows the structure of BET research itself and its research axes. Thus, in addition to the introduction of the report, it is structured in 8 basic chapters, one for each research axis of the research. In all chapters -except for chapter 7- first an overview is provided and then the specific input of the four survey countries.

The primary purpose of the **introduction** is to set the general framework. So, after a reference to the digital revolution in the formal education sector, the BET! project is briefly presented, as well as the BET! research and the methodological framework of the BET! research. The first chapter of this report, **Chapter 1** refers to the impact of COVID-19 into the educational system, focusing on challenges during the transition to online - distance learning for teachers and vulnerable students. **Chapter 2** is devoted to teacher competence frameworks and learning in the field of digital education, focusing on important teacher competencies in digital education and teacher trainings on digital education. **Chapter 3** focuses on digital education approaches and practices, looking at the use of digital tools inside and outside the classroom as well as the most frequently used digital tools by teachers and students. **Chapter 4** refers to the formative needs of teachers and their training habits with a focus on the digital skills and competencies teachers would like to improve in the future and their training habits/ preferences. In **Chapter 5** the relations between digital technologies and teaching are being addressed by focusing on teachers' attitudes towards the use of digital tools in education, challenges and risks of digital education as well as advantages and opportunities of digital education. **Chapter 6** focuses on the development of effective digital learning environments for vulnerable students, by analysing how digital education can increase vulnerable students' inclusion, or on the other hand decrease it. Followingly, in **Chapter 7** examples and good practices are presented, including digital tools, projects/ initiatives/ programmes and teacher networks. Finally, in **Chapter 8** policies in the field are presented including policies on inclusive education, on digital education and on civic education. The report closes with the **conclusions** chapter, where the overall main findings and overall recommendations are presented.

The digital revolution in the formal education sector

The digital revolution has transformed and is transforming our daily lives and the way people interact and organize to reach common goals. This is particularly true for younger generations: the way they interact, access information, communicate with each other and learn has tremendously changed. But so far, school classrooms have not been nor at the forefront nor the main stage of this revolution. Especially in the countries touched by the BET! project, teaching and learning processes in the formal education sector remain largely untouched by this transformation. According to a 2018 OECD study[1], less than 40% of the teachers felt ready to use digital technologies in the teaching process, with big differences from one EU country to another.

Today, 20 years after the Internet entered massively in EU households, "Generation Z" digital natives experience a recurrent discrepancy in the way they use and value digital technologies to learn and increase their knowledge and skills outside schools and the way these technologies are (not) used nor valued in the formal educational system. Making sure educational and training processes are structured to integrate and exploit the full potential of opportunities given by the digital age is not a new issue in the educational debate.

If digital natives - particularly those coming from diverse backgrounds or with special educational needs - are not necessarily able to effectively use technology in educational settings, and instead would greatly benefit from learning meaningful ways to use technology for learning purposes and collaborative knowledge creation, educators at large need to be supported to embed digital competence in their teaching techniques. This is particularly true in the countries touched by the project, whose teaching staff is senior compared to other EU countries and has had poor or snatchy access to recurred and structured lifelong learning opportunities provided by the national authorities. The abrupt lockdown called across most EU countries -

[1] TALIS 2018 Results (Volume I), *Teachers and School Leaders as Lifelong Learners* https://www.oecd-ilibrary.org/education/talis-2018-results-volume-i_1d0bc92a-en

including Italy, Spain, Greece, and Portugal - with the sudden deployment of distance digital learning for schools of all levels has suddenly highlighted the extreme difficulties experienced by a large section of teachers to manage the digital environment and to effectively engage students, and particularly those with disadvantaged backgrounds, in online learning processes.

The BET! project wants to intervene on this issue by creating a digital framework to guide and help teachers in designing personalized digital and blended learning programs fit to reach the most vulnerable students. This will be done with a strategy combining action-oriented research, the development and testing of innovative digital tools, and by stimulating the policy dialogue on the future of education in the digital era between school practitioners and local, regional, national and EU authorities responsible for education.

The BET! project

The BET! project contributes to innovate the professional practices, skills, and knowledge of European teachers to respond properly at the challenges of the future of a global and digital society, by specifically:

1. delivering a **needs analysis research** on educational innovation and digital skills development in school curricula in the COVID 19 and post-COVID 19 era in the 4 countries involved. The research aim is to assess digital competences gaps emerged during 2020 lockdowns and identify common needs of teachers and schools (IO 1 Betting on research).
2. **designing a European Digital Curriculum** aimed at identifying the best learning strategies and the most appropriate digital and technological tools to address the formative needs of socially, economically, culturally disadvantaged students, or cognitive/emotionally vulnerable students (IO2 Betting on teachers).
3. implementing an **EU BET! Academy** (IO3 Betting on our future): a comprehensive set of online and in presence training courses and webinars for teachers on the issues of Agenda 2030, inclusive education, and ICTs applied to learning environments.

These outputs will focus on:

A. improving teachers ICTs skills to guide and teach their students to use digital technologies creatively, responsibly, and cooperatively.

B. providing digital resources and tools on the cross-cutting issue of Agenda 2030 – a theme chosen because of the role that the agenda 2030 can contribute to the understanding of the present and future implications of the COVID 19 pandemic.

The BET! project aims to produce the following lasting impacts at local, national and EU level:

- strengthening the schools' management and the teachers' skills to innovate the learning and teaching processes.
- innovating the regional and national strategy for the promotion of GCE into the curricula.
- reinforced connections and networking among CSOs, schools, municipalities, and other local entities to guarantee the sustainability and wider implementation of the digital practices.
- provide a unified framework at EU level to build a transnational community of teachers (the BET! Community) that would have a digital space to interact on the specific challenges entailed with adapting their teaching styles and methods to the digital environment.
- inform EU-level decision makers (namely, MEP) with the BET! Project results to stand as example of a fruitful adaptation of teaching to the new digital era.

Overview of the BET! research

Within the BET! project, the first Intellectual Output that was developed was the need analysis research on educational innovation and digital skills development in school curricula in the COVID 19 and post-COVID 19 era. The aim of the research was to collect tailor-made information helpful for the development of the Digital European curricula (IO2) but also to provide evidence to influence policy at local, national, and European level. The research axes were the following eight:

1. The impact of COVID 19 into the educational system, with a focus on formative needs of vulnerable students.
2. Teacher competence frameworks and learning field of digital education.
3. Digital education approaches and practices into the curricula at European level.
4. The formative needs of teachers and educators and their training habits (most used platforms and channels).
5. Relations between digital technologies and teaching; risks and new opportunities.

6. Development of effective digital learning environments for vulnerable students.
7. Examples and good practices of digital tools and materials and cutting-edge pedagogies for the digital environment.
8. National/ European policies in the field.

The BET research was coordinated by ActionAid Hellas (lead partner) who was responsible for creating guidelines as a methodological framework for all the partners to carry out the national desk research and need analysis, creating the research tools and reporting templates, coordinating questionnaire submission and interview conduction processes, analysing, and summarizing the results. The lead partner was supported by Lama Agency (technical partner) in all tasks mentioned above, while in addition Lama Agency also facilitated the use of the survey software, by creating the online survey to collect data and analysing data.

All partners carried out the national research and needs analysis based on the methodological guidelines provided. This included the translation of the research tools in their language, the conduction of desk research, the submission of the survey and the interviews with keys actors at local level and drafting a national report, based on the template provided by the lead partner. Followingly the Lead partner elaborated on the results from the national researches and need analysis and created this EU research report and needs analysis and disseminated among the partners the results of the research.

Finally, for the purposes of the research some common definitions were agreed amongst the partnership. These include the definitions on digital education as well as distance learning (see Chapter 1 The impact of COVID-19 into the educational system- Overview). Furthermore, it was decided from the wide spectrum of vulnerability, to focus on socio-economic vulnerability, thus vulnerable students are defined for this research as students from socially disadvantaged homes/ backgrounds.

Methodological framework of the BET! research

The BET! research design

Research was conducted through a mixed-method approach and sequential explanatory design, including quantitative data and qualitative data collection. This variety of methods allowed us to both measure and explain digital education gaps and opportunities in the four countries involved. With regards to the research tools utilized, the online questionnaire designed was the main tool of the research, while the desk research and the interviews were used to deepen and contextualise the findings of the online survey. A data collection matrix has been developed, including the 8 research axes and the research tools that would be used to investigate each of them.

	Desktop research Phase A	Desktop research Phase B	Questionnaires	Interviews
1. The **impact of Covid 19 into the educational system**, with a focus on formative **needs of vulnerable students**;	☑	☑	☑	☑
2. **Teacher competence frameworks** and **learning** field of **digital education**;	☑	☑	☑	☑
3. **Digital education approaches and practices** into the **curricula** at European level;		☑	☑	☑
4. The **formative needs of teachers** and educators and their training habits (most used platforms and channels);			☑	☑
5. Relations between **digital technologies** and **teaching**; **risks** and **new opportunities**;			☑	☑
6. Development of **effective digital learning environments** for **vulnerable students**;		☑	☑	☑
7. **Examples** and **good practices** of **digital tools** and **materials** and **cutting-edge pedagogies** for the **digital environment**		☑	☑	☑
8. National / European **policies** in the field		☑	☑	

Figure 1 - BET research data information matrix

In the following sections each of the research methods used will be further analysed, also including a summary table for each of them.

The BET! desk research

The desk research/ secondary research was divided in two main phases:

- **Preliminary**: a preliminary analysis of main sources of knowledge, related projects and research about digital needs and skills for schools and teachers in Europe, to develop the questionnaire.
- **Final**: a comprehensive review of published research, policies, best practices to contextualize the online survey findings.

In both phases, each partner delivered a country matrix to the research coordinator, focusing on the country specific issues. Main research targets of the **Preliminary desk research** were:

- 1. The impact of Covid 19 into the educational system, with a focus on formative needs of vulnerable students;
- 2. Teacher competence frameworks and learning field of digital education.

During the **Final** phase of desk research these topics were also investigated:

- 3. Digital education approaches and practices into the curricula at European level;
- 6. Development of effective digital learning environments for vulnerable students;
- 7. Examples and good practices of digital tools and materials and cutting-edge pedagogies for the digital environment;
- 8. National / European policies in the field .

Table 1 Desk Research Overview

Target	Number	Timeline	Tools
Scientific publications, recognized best practices, National and EU policies, relevant projects	n.d.	Preliminary template by June 2022 Final template by September 2022 (Fine tuning after interviews)	Desk research template - Preliminary Desk research template - Final

The BET! online survey - questionnaire

The use of a quantitative research tool was decided to allow for highlighting general trends[2]. More specifically a cross-sectional study research type was applied due its suitability for researching opinions and attitudes of specific groups on an area of interest or a topic[3]. The online survey was used to gather a significant number of responses, to measure the digital gaps and practices in each of the project countries and compare country results.

Educators in formal education, including teachers and school directors, and educators in **non-formal education**, working with students from 11 to 15 years old, were the target of the online survey.

The questionnaire was prepared on a non-formal basis and the answers are given on a personal perspective and do not necessarily reflect the view of the schools.

Table 2 Online survey – questionnaire overview

Target	Number (proposed target)	Timeframe	Tools
Teachers, educators (formal & non-formal) school directors, (excl. primary school)	100 per country Proposed segmentation • 75 teachers • 15 non-formal educators (not employed by schools but rather by NGO, third sector organizations, etc.) • 10 managers/ directors	Questionnaire creation/ translation - Survey launch by June 2021 Preliminary results by July 2021 Survey closure by August 2021 Results analysis by September 2021	Questionnaire Master ENG - BET!

2 Creswell, J. (2016). *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research*. Athens: Ion [in Greek]

3 Fraenkel, J. R., & Wallen, N. E. (2007), *How to design and evaluate research in education* (6th ed.). McGraw-Hill international edition.

A. Questionnaire design

A structured electronic questionnaire was developed as a research tool for the purpose of this study. The 8 research axes were used as the basis for the development of the research questions, which then allowed for the formation of the survey questions, as detailly described in the following table. A first section was then added to research utilized for the gathering of demographic data of the sample. The complete questionnaire design is available in Appendix 1 – Online survey questions (in English).

At the beginning of the questionnaire a link to the information for the processing of personal data was provided, including information on the object of the data processing, purposes of the processing, processing methods, access to data, data disclosure, data transfer, nature of data provision and consequences of refusal to reply, data subject's rights, procedure for the exercise of rights. All participants in the survey had to agree with their personal data being processed as described in this privacy information document in order to proceed.

Table 3 - BET Questionnaire Design

Research axes	Research questions	Survey questions
01. The impact of Covid 19 into the educational system, with a focus on formative needs of vulnerable students	What was the impact of Covid 19 for teachers?	Q18, Q19, Q20
	What was the impact of Covid 19 for students?	Q21, Q22, Q23
02. Teacher competence frameworks and learning field of digital education;	What is the learning of teachers in the field of digital education?	Q13
	What are the competencies of teachers in the field of digital education?	Q8
	What teacher competencies are the most important in the field of digital education?	Q9, Q10
03. Digital education approaches and practices into the curricula at European level	What are the front of class digital education approaches and practices?	Q1
	What are the distance learning digital education approaches and practices?	Q2
04. The formative needs of teachers and educators and their training habits (most used platforms and channels);	What are the most used digital tools/ platforms and channels?	Q1, Q2 (open questions)
	What are the training needs of teachers and educators in the field of digital education?	Q 11, Q12
	What are the training habits of teachers and educators?	Q14 , Q15, Q16
05. Relations between digital technologies and teaching; risks and new opportunities;	Which is the attitude of teachers towards digital technologies in education?	Q3
	What are the opportunities/ advantages of front of class digital technologies?	Q4
	What are the opportunities/ advantages of distance learning digital technologies?	Q5

	What are the risks/challenges for the integration of front of class digital technologies?	Q5, Q6
6. Development of effective digital learning environments for vulnerable students;	What could be the impact of digital education on the inclusion of vulnerable students?	Q5, Q6 (open questions)
7. Examples and good practices of digital tools and materials and cutting-edge pedagogies for the digital environment		Q17

The questionnaire was developed by the research coordinator (ActionAid Hellas) and the technical partner (Lama Agency), in a master English version. Partners provided their feedback and then translated the final version in their language. The technical partner then created the four versions of the questionnaire (in Italian for Italy, in Greek for Greece, in Romanian for Romania and in Portuguese for Portugal) and partners disseminated then the respective link to the questionnaire for the conduction of their national research.

B. Data collection

Non-probability sampling and specifically convenience sampling was used, as participants were selected on the basis of their willingness and availability to participate in the survey, provided that they met the criterion of working with students aged 11-15 years old, during the last school year. Calls for participation were handed via social media and emails/ partners' newsletters. Furthermore in some cases the partners also utilized their network of associations and education institutions to disseminate the questionnaire.

The online survey was launched on the 25th of June 2021 and closed on the 20th of August 2021.

C. Data analysis

Qualtrics software was used for the analysis of the data collected. After data collection, a data cleaning process followed, excluding from the analysis all responses with a questionnaire completion rate <60%. As the number of responses gathered in each of the four participating countries was not balanced, especially for the analysis of the responses for the EU report, the answers of the individual countries were weighted, so that all countries weigh the same, irrespective of the number of participants in each country.

D. Survey sample

Cumulatively for the 4 countries of the project, after data cleaning, 515 responses to the online survey were gathered. 109 of them were from Italy, 100 from Greece, 205 from Romania and 101 from Portugal.

With regards to the demographic of the participants in our survey, 85.4% of them were teachers, 10.3% were head teachers/managers/members of the leadership team, 3.8% were non-formal educators and 3.1% identified as "other". 90.8% of the respondents worked in the public sector and 9.2% worked in the private sector. Furthermore, 43.9% of the respondents worked in primary education and 71.4% of the respondents worked in secondary education.

Responses from different regions of the 4 countries were collected, with a big percentage of the respondents working during the last school year in Tuscany region for Italy (75.2%), in Attica region for Greece (48%), Sud-Est for Romania (35.1%) and Área Metropolitana de Lisboa for Portugal (54.5%).

Other demographic characteristics of the sample include age distribution, with almost half of the respondents (45%) being 45-54 years old, 24% being over 55 years old, 24% being 35-44 years old and 8% being 18-34 years old, and respectively years of working experience on that role, with almost half of respondents, 47.8%, having more than 20 years of experience, 14.7% having 16-20 years of experience, 15% having 11-15 years of experience, 12% having 6-10 years of experience and 10.4% having less than 5 years of experience.

Finally, with regards to educational attainment, 1.9% of the respondents had something lower than a bachelor's degree, 39.5% of the respondents had a bachelor's degree, 53.1% of the respondents had a master degree and 5.6% of the respondents had a PhD degree.

The BET! In-depth Interviews

Qualitative 1-to-1 semi-structured interviews helped explain underlying reasons of quantitative data through detailed descriptions of teachers' and stakeholders' experiences, feelings and perceptions and deepen on best practices.

For the interviewees **four target categories** were identified and partners were prompted to conduct interviews with at least one representative per each target category. These categories were:

- **experts in digital education**
- **institutional stakeholders** (e.g., agencies, ministries…)
- **school directors**, managers, inspectors
- **teachers in formal education**

As for the online survey, the questions for interviews were developed by ActionAid Hellas and Lama Agency, in a master English version and a first draft was submitted to the partners, in order to receive feedback and comments. After the analysis of the online survey findings the interview questions were finalized. The guidelines provided by the lead partner to project partners for the conduction of the BET research interview are available in Appendix 2 - Interview Guidelines. Some space for local adaptations was provided, allowing for partners, to make a selection of the questions provided and to also add questions related to their national framework, if needed. Each partner then carried out the interviews and reported the findings in the national report template provided by the lead partner.

Before the conduction of the interviews a document with the information for the processing of personal data was shared with the interviewees, including information on the data controller and data processor, purposes of processing, categories of personal data, authorization for interview recording, legal basis for processing, methods of data processing, data retention period, nature of data provision, dissemination of research results and rights of the data subject.

The interviews of the BET research were conducted during September - October 2021. In total 18 stakeholders from the 4 project countries participated in the interviews, including digital education experts, institutional stakeholders, school management and teachers.

Table 4 In depth interviews overview

Target	Number (proposed target)	Deadlines	Tools
Experts, institutional/policy maker stakeholders, school managers, teachers	1 per category per country	First draft of the questions by July 2021 Final version of the questions by September 2021 Interviews conducted/ reported by October 2021	Interview Template Master ENG - BET!

Chapter 1

THE IMPACT OF COVID-19 INTO THE EDUCATIONAL SYSTEM

Overview

The impact of COVID-19 has been a catalyst for countries' education systems, acting as an accelerator to the adoption of digital education practices. In this first chapter of this report we will try to analyze this impact, focusing more on the needs of students, especially vulnerable students.

However, the interpretation of the conclusions of this chapter should be done with care, taking into account the differentiation of the terms "distance learning", a term that is closer to the COVID-19 school experience, and "digital education", that acts as an umbrella term. More specifically, in the context of this research, we define as *distance learning* a mode of teaching and learning characterized by separation of teacher and learner in time and/or place for most part of the educational transaction, mediated by technology for the delivery of learning, while we define as *digital education* the use of digital tools and technologies during teaching and learning, both at school and for homework.

Introduction to the impact of COVID-19 into the educational systems

More than 188 countries, encompassing around 91% of enrolled learners worldwide, closed their schools as an effort to eliminate the spread of Covid-19[4]. On average across the 30 countries with comparable data for all levels of education, pre-primary schools were closed for 55 days, primary schools for 78 days, lower secondary schools for 92 days and upper secondary schools for 101 days between 1 January 2020 and 20 May 2021[5]. Especially for Western Europe from March 2020 to February 2021 schools were fully closed for 52 days, partially closed for 37 days and fully open for 87 days,

[4] OECD (2020), *The impact of COVID-19 on student equity and inclusion: Supporting vulnerable students during school closures and school re-openings, OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, https://doi.org/10.1787/d593b5c8-en.

[5] OECD (2021), *The State of Global Education: 18 Months into the Pandemic*, OECD Publishing, Paris, https://doi.org/10.1787/1a23bb23-en

while for Easters Europe and Central Asia schools were fully closed for 59 days, partially closed for 43 days and fully open for 62 days (weighted average).[6]

Recognising the serious impact of school closures on the learning and well-being of students, many countries adjusted their strategies concerning school closures as the pandemic evolved[7]. At least 463 million – or **31 per cent – of schoolchildren worldwide could not be reached by digital and broadcast remote learning programs** enacted to counter school closures.[8]

Challenges during the transition to online - distance learning

From the BET survey it came up that teachers faced a wide range of **challenges** when switching to online/distance learning, with the most commonly stated ones being keeping all **pupils motivated and engaged** selected by 41.5% of the respondents, **increased workload and stress working from home** that followed with 40.1%, involving pupils from **socially disadvantaged homes** with 29.9%, pupils' **access to digital tools** (devices, computers, softwares…) with 29.1%, pupils' **access to a stable internet connection** with 27.8% and tiredness/fatigue of students with 26.3%.

Tapping into relative data to explain the result on pupil's access to a stable internet connection, we see that according to the International Telecommunication Union (ITU) World Telecommunication ICT Indicators Database in all the survey countries smaller percentages of the population are using the internet, compared to the average of the Euro area. In more detail, 74% of the population in Italy (2018 data), 74% of the population in Romania (2019 data), 76% of the population in Greece (2019 data) and 75% of the population in Portugal (2019 data), are using the internet, compared to the 87% average of the Euro area (2019 data).

Furthermore, with regards to internet speed, according to the Speedtest Global Index (October 2021 data), in two of the survey countries, Greece and Italy, the average fixed

[6] UNICEF (2021). *COVID-19 and School Closures. One year of educational disruption.* Available at: https://data.unicef.org/resources/one-year-of-covid-19-and-school-closures/

[7] OECD (2021), *The State of Global Education: 18 Months into the Pandemic*, OECD Publishing, Paris, https://doi.org/10.1787/1a23bb23-en.

[8] United Nations Children's Fund (2020). *Covid-19: Are children able to continue learning during school closures? A global analysis of the potential reach of remote learning policies using data from 100 countries.* UNICEF, New York.

broadband speed is lower than the global average (29.68 Mbps for Greece, 49.27 Mbps for Italy, 93.59 Mbps for Portugal and 122.3 Mbps for Romania, compared to the global average of 56.09 Mbps. With regards to the average mobile speed, the situation seems to be better, with all survey countries performing better than the global average global average of 28.61 Mbps (33.52 Mbps for Romania, 35.31 Mbps for Italy, 39.10 Mbps for Portugal, 48.88 Mbps for Greece).

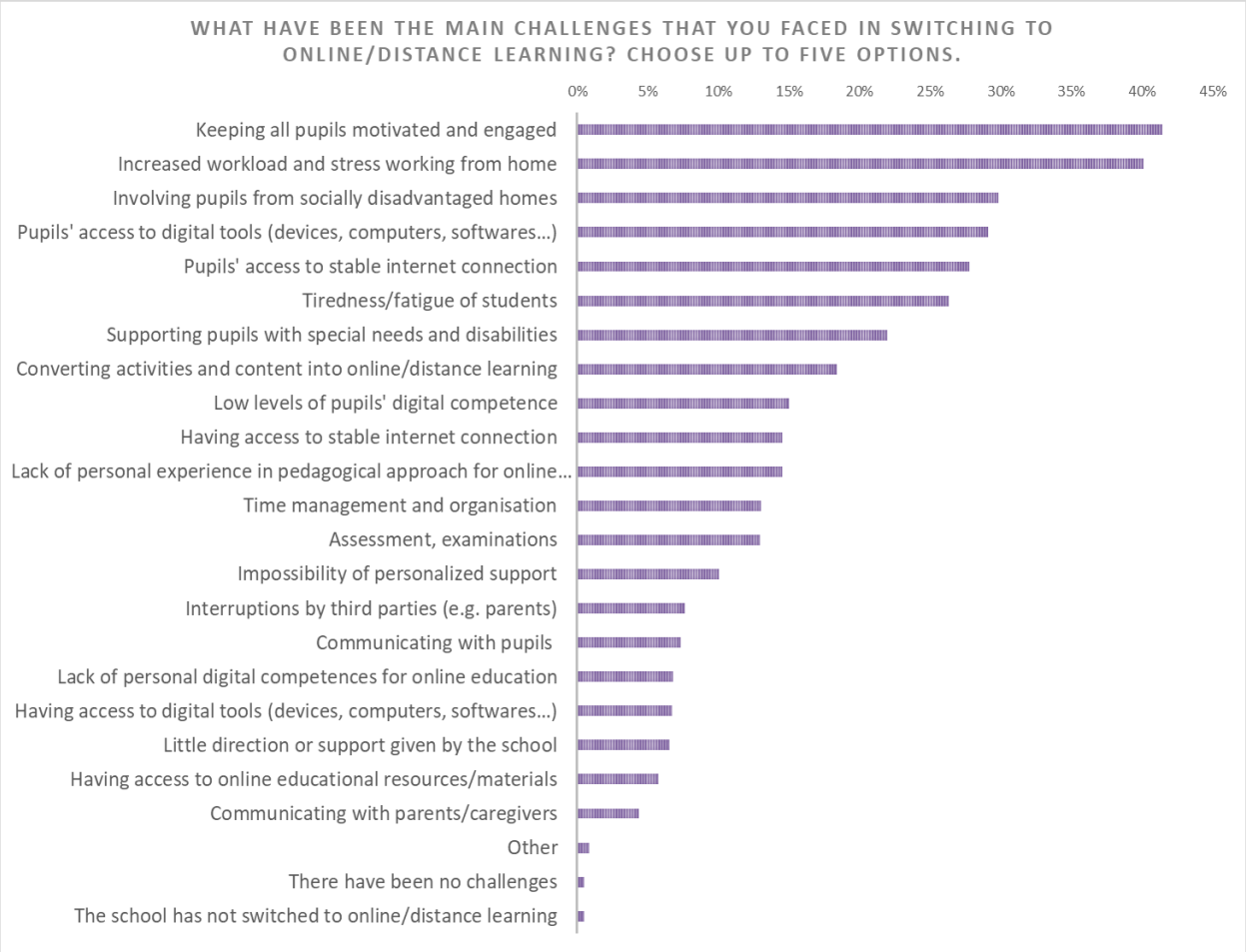

Figure 2 - Challenges faced by teachers in switching to online/ distance learning

In the following graph some interesting variations observed among the four countries of our survey are presented with regards to challenges faced by teachers in switching to online distance learning. Pupils' access to digital tools, involving pupils from socially disadvantaged homes and tiredness/fatigue of students are selected as a challenge by more teachers in Greece compared to the other countries. Same goes for low levels of pupils' digital competence, which is selected by more teachers in Portugal as a challenge compared to the other countries.

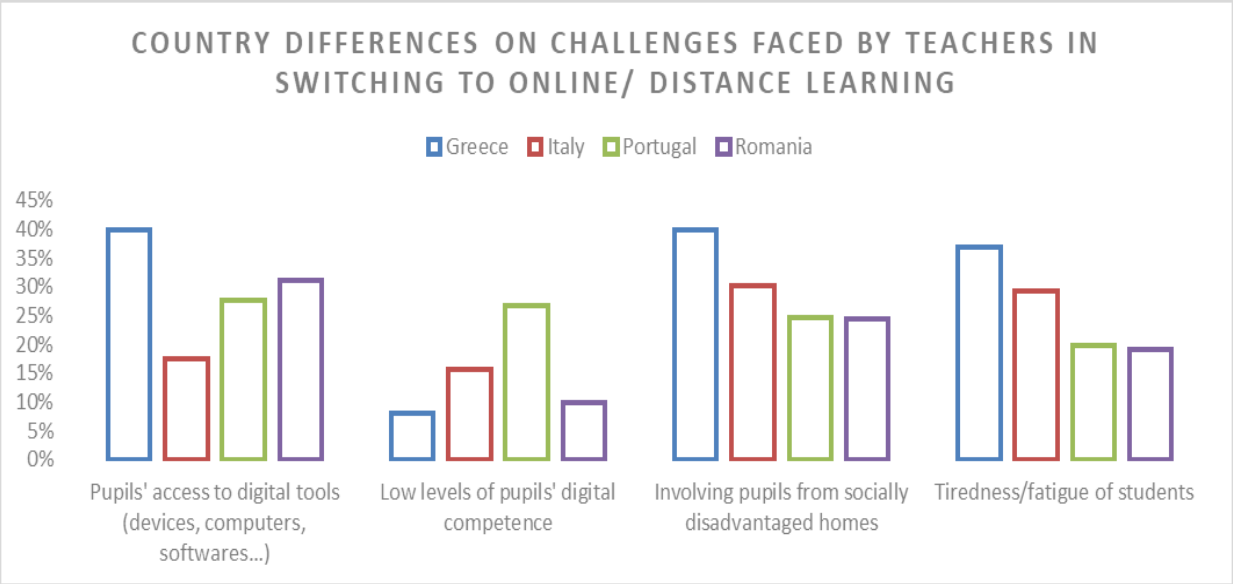

Figure 3 - Country differences on challenges faced by teachers in switching to online/ distance learning

In responding to the challenge of involving students in distance education, only 17.6% of teachers participating in our survey indicated to have promptly received guidance (support, advice, training). 50.7% indicated that they received guidance, but after having to deal with the new distance education reality and 31.7% indicated that they did not receive guidance. Interestingly, the percentage of respondents who answered that they did not receive any guidance was higher for respondents with less than 5 years of experience (42%).

When asked by whom they received guidance, 34.7%, stated that they received guidance by colleagues, 24.4% stated that they receive guidance from head teachers/ managers, 14.4% from educational authorities, 13.1% from other educational institutions and 6.4% from various other sources.

Furthermore, with regards to student participation, unfortunately not all students seemed to be actively participating in distance education, with 57% of the teachers participating in our research stating that all or most of them actively participated in distance education sessions during the covid crisis. This percentage had some variations across the survey countries (43.7% for Greece, 56.3% for Italy, 63.3% for Portugal, 64.8% for Romania). **More than 1 out of 10 respondents (11.3%) indicated that less than half of their students actively participated in distance education sessions during the covid crisis**.

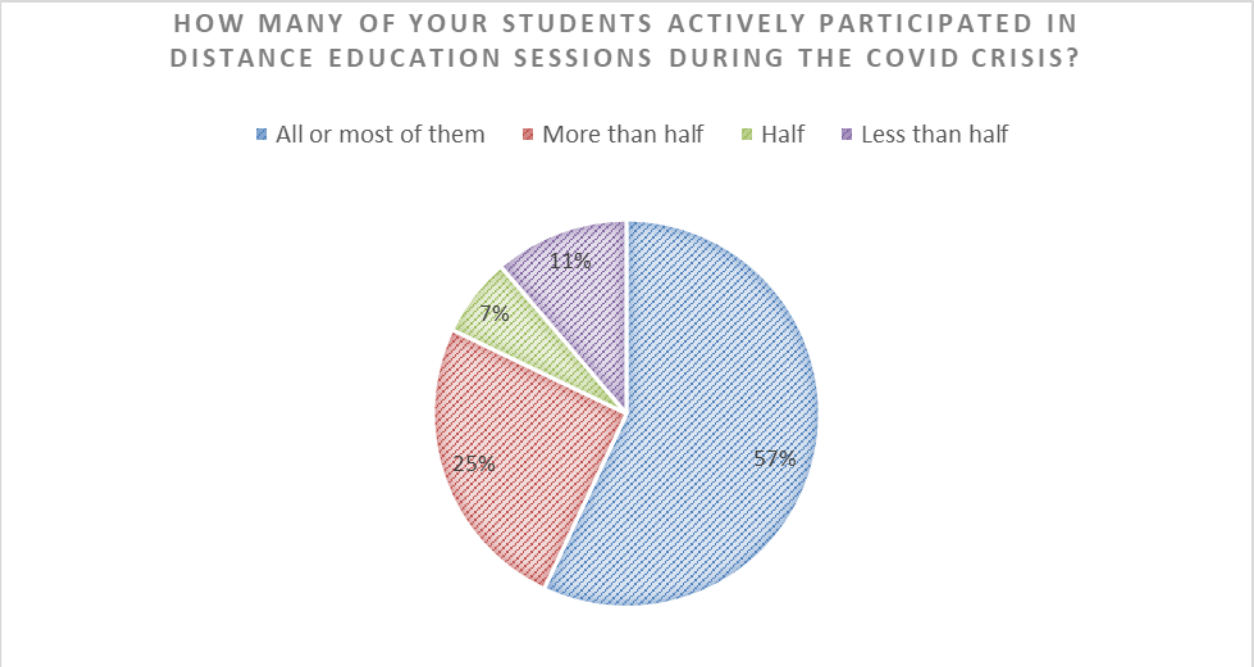

Figure 4 - Percentages of students actively participating in distance education sessions during the COVID-19 crisis

Challenges for vulnerable students and vulnerable students' inclusion in online - distance education

Focusing more on **students from vulnerable families** (those living in disadvantaged socio-economic conditions), the most commonly identified **challenges** by the teachers participating in our survey were having access to **stable internet connection** (47.2%), having **access to digital tools** (devices, computers, software…) (41.3%), and **lack of an adequate place at home** (32.7%). This is also in line with PISA findings regarding discrepancies among advantaged and disadvantaged students with regards to the availability of a quiet place to study at home and a computer to use for schoolwork, as on average across OECD countries, more than 90% of advantaged students but only 69% of disadvantaged students reported having a quiet place to study at home and a computer that they can use for schoolwork.[9]

Lack of motivation and engagement, disaffection (32.5%) and low levels of pupils' digital competence (24%) followed in popularity in our survey. Only 1.8% of respondents

[9] OECD (2019), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/b5fd1b8f-en.

stated that “There have been no particular difficulties". Furthermore, interestingly enough, only 4.3% chose lack of competences of teachers in involving these students and only 3.3% chose little direction or support given by the school.

Finally, with regards to **whether the issue of vulnerable students’ inclusion in distance education was tackled effectively in their school,** almost half (48.6%) of the teachers indicated that the response was partly effective, 32.3% indicated that it was very effective. On the other hand, there was also an average of 15.7% who indicated that the response was not effective, with the percentages having some variations amongst the participants of the different countries (15.8% for Italy, 25.6% for Greece, 14.4% for Portugal and 6.9% for Romania). Interestingly, only 3.4% indicated that this was not a concerning issue in their school.

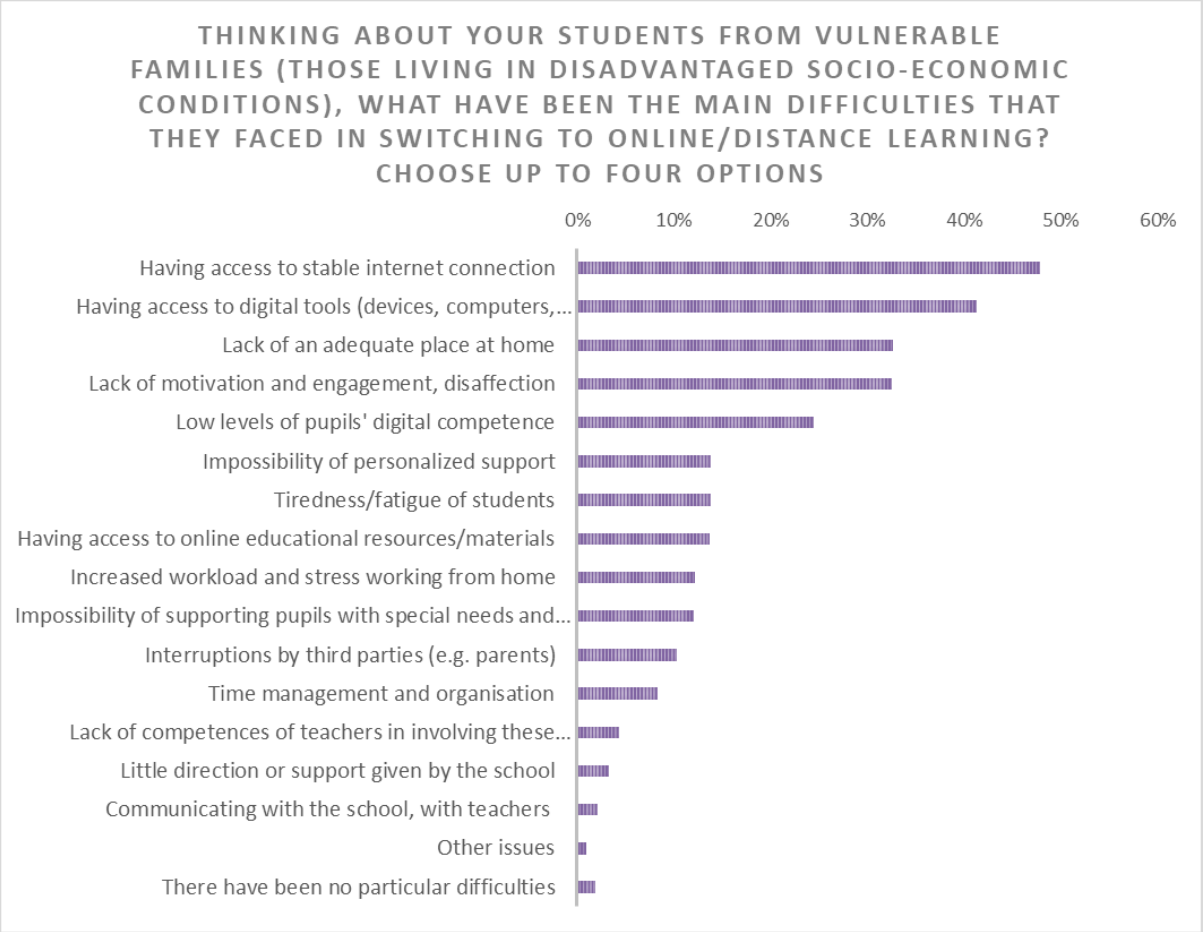

Figure 5 - Challenges faced by vulnerable students in switching to online/ distance learning

The impact of COVID-19 into the educational system in Italy

Italy was the first European country hit by the Covid 19, schools closed on the 5th of March 2020 and never reopened that school year. During the following school year 2020-2021, schools reopened with students either attending classes physically or through distance learning. This was conditioned by the epidemiological context of each local territory (municipality/province/region) which determined levels of risk (Red/Orange/Yellow/White Zone), creating a heterogeneous situation in the country. In general, in primary and lower secondary schools (Scuole Secondarie di primo grado) lessons were carried out in person apart from when self-isolating. In upper secondary schools, 100% of the activities were carried out via distance learning. In regions with a high level of risk (red zones), the use of distance learning was also extended to students in the second and third years of lower secondary education. There was, however, the possibility of carrying out activities in person when using laboratories or to guarantee scholastic inclusion for pupils with special needs. With regards to the 2021-2022 school year, the Ministry of Education "considered (it) absolutely necessary to give priority to face-to-face teaching recommending, where possible, to maintain social distancing".[10]

The first impact of Covid in schools on a national level was analysed in 2020, by INDIRE (National Institute for Documentation, Innovation and Educational Research) which released a report in 2020 which was then updated in the following year. It was entitled Teaching Practices During Lockdown[11] aimed at demonstrating how and to what extent

[10] MIUR (2021) – Piano Scuola 2021-22 Piano+Scuola+21_22.pdf (miur.gov.it)

[11] INDIRE (2020). *Indagine tra i docenti italiani pratiche didattiche durante il lockdown - Report Preliminare*, https://www.indire.it/wp-content/uploads/2020/07/Pratiche-didattiche-durante-il-lockdown-Report-2.pdf INDIRE (2020). Indagine tra i docenti italiani pratiche didattiche durante il lockdown - Report Integrativo. https://issuu.com/indire/docs/report_integrativo_novembre_2020_con_grafici__1_

the closure of schools linked to the Covid-19 emergency influenced teaching practices and the organization of schools. This report examined dimensions such as: methods, technologies employed, contents, inclusion, evaluation and training strategies. SIRD (Italian Society of Educational Research) also carried out research between April and June 2020 engaging more than 16,000 Italian teachers comparing different ways of distance learning adopted during the Covid 19 period. What emerged from this study was a missing direct link between teachers' workloads and the results achieved in terms of learning efficiency, inclusion and competence evaluation[12]

In May 2021, the INGO Save the Children released a National Report that examined the situation of families and children in Italy affected by the coronavirus emergency. According to Save the Children's paper[13], six out of ten parents (60.3%) believed that their children would need support when they returned to school given the loss of learning during the months at home. This is confirmed by the INVALSI 2021 test results (June 2021)[14], which gather more than two million Italian students' yearly learning outcomes providing indications of the state in which the Italian school system is in. The INVALSI 2021 test results clearly demonstrated that the greatest learning losses were recorded among disadvantaged students. The test also reported that the school dropout rates (failure to achieve the minimum skill targets for their course of study) increased by 2.5 % during the last year (from 7% in 2020 to 9.5% in 2021) with huge territorial differences (up to 12.2%) between the North, centre and South of Italy.

During the first lockdown (March-June 2020), teachers faced a wide range of challenges when switching to online/ distance learning and adopted several strategies

[12] SIRD (2020). *Ricerca nazionale SIRD Per un confronto sulle modalità di didattica a distanza adottate nelle scuole italiane nel periodo di emergenza COVID-19* - https://www.sird.it/wp-content/uploads/2020/07/Una_prima_panoramica_dei_dati.pdf (PAG 8)

[13]Save the Children (2020). *L'impatto del COVID sulla Povertà Educativa* https://s3.savethechildren.it/public/files/uploads/pubblicazioni/limpatto-del-coronavirus-sulla-poverta-educativa_0.pdf

[14] INVALSI (2021) *I risultati delle prove INVALSI 2021* https://www.invalsiopen.it/risultati/risultati-prove-invalsi-2021

to adapt to the emergency context. According to the Fondazione Agnelli[15] survey, there was no methodological and organizational change regarding daily distance learning, compared to before the pandemic. Almost all Italian schools offered online and live lessons, homework and tests using traditional teaching methods without rethinking times, activities and tools (didactic planning) which took into account the difference of doing school in the classroom or on a device. INDIRE reports that videoconferencing lessons were the most followed activities across all school levels, from Primary to Secondary (89.7% in Primary, 96.7% in Lower Secondary and 95.8% in Upper Secondary). After the first emergency period, it became mandatory - and no longer only recommended - for schools to activate remote teaching methods considering the specific needs of students with disabilities and special needs. Regarding the tools used the most, the so called "electronic register" which contains all aspects of school-family communication as well as acting as a digital repository was used by 77.6% of the respondents. The second most popular tool was Google Meet with 66.5% respondents having used it. These two tools greatly outstrip all the other existing videoconferencing systems by far: Zoom (20.5%), weSchool (11.2%), Microsoft Teams (7.2%) and Webex (6.4%. A very interesting case is the one that emerges from the use of WhatsApp as the most used technological application during the lockdown: 61.7% of respondents declared that they had used this app. This is a very high figure, especially when compared with 77.6% of the answers reported in reference to the use of the electronic register, the "official" tool par excellence used by the school even before the lockdown and obviously strengthened during the Covid.

The BET! survey shows that the main challenges that the teachers faced in switching to online/distance learning was to keep all pupils motivated and engaged (46.8 %) and 30.3% of teachers reported in particular the challenge of involving pupils form socially disadvantaged backgrounds. 47.7% of teachers also reported an increased workload and stress working from home and the tiredness/fatigue of students (29.4 %).

[15] Fondazione Agnelli e Centro Studi Crenos dell'Università di Cagliari (2021) *La DaD alle scuole superiori nell'anno scolastico 2020-21: una fotografia.* *https://www.fondazioneagnelli.it/wp-content/uploads/2021/07/Ricerca_La-DaD-as-2020-21_una-fotografia.pdf*

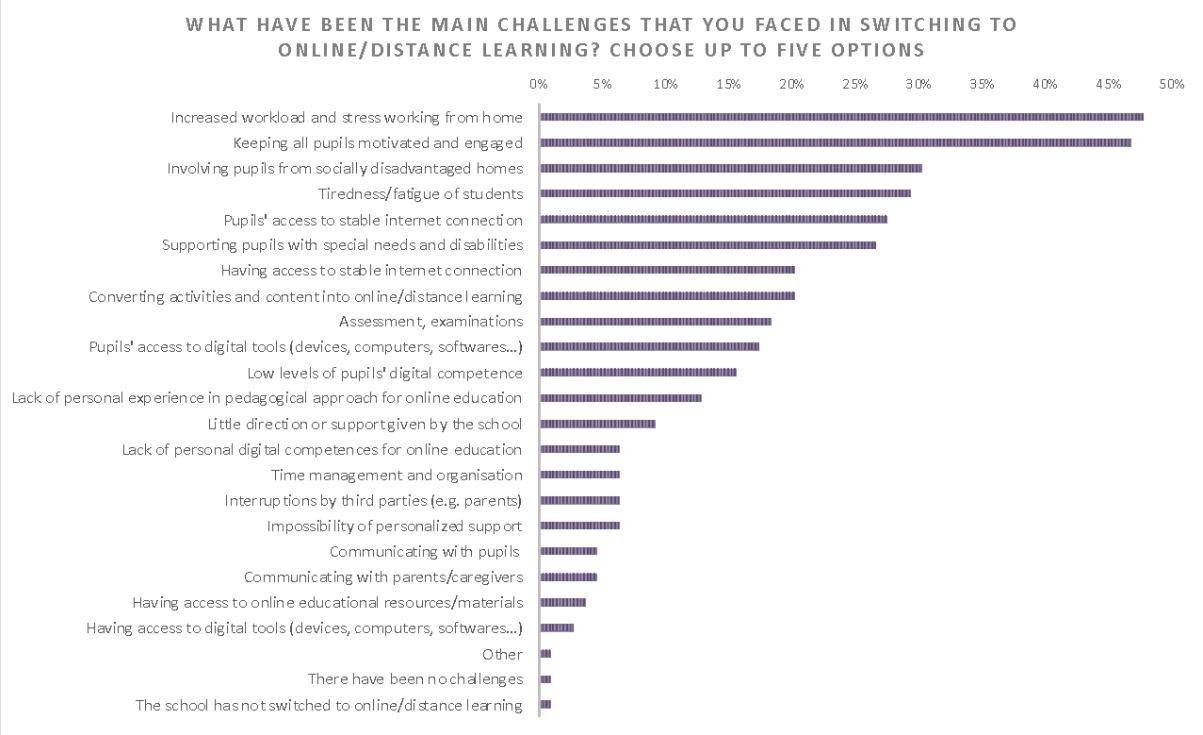

Figure 6 - Italy - Challenges faced by vulnerable students in switching to online/ distance learning

Amongst the challenges faced, 20.2% mentioned the difficulty of not having access to a stable internet connection. Tapping into relative data to explain this result, we see that according to the International Telecommunication Union (ITU) World Telecommunication ICT Indicators Database 76% of the population in Italy (2019 data) were using the internet, compared to the 87% average of the Euro area (2019 data). Furthermore with regards to internet speed in the country, according to the Speedtest Global Index (May 2021 data), the fixed broadband speed in Italy is **72.52** whereas the mobile speed is 51.29 compared to the global average fixed broadband speed of 105.15 and mobile speed of 54.53.

INDIRE reported that different actors rooted in various territories supported schools and teachers in the use of technologies and in increasing the connectivity of students and families. Schools collaborated with parent committees, social services, NGOs, universities and research institutions to undertake actions in order to protect the right to study and therefore allow students to continue their studies. Police were involved to reach and include students living in conditions of geographical and / or social isolation.

In responding to the challenge of involving students in remote education, 56.3% of Italian teachers participating in the BET survey indicated to have received guidance in

form of support, advice and/or training only after having had to deal with the new distance education reality due to the lockdown. Moreover 32.3% stated that they didn't receive any guidance. Out of the teachers who did receive guidance, 39.4% declared that they received support from their peers whereas 12.8% from the Head teacher.

Turning to students' engagement, 56% of teachers interviewed reported that all (or most of) their students actively participated in distance learning.

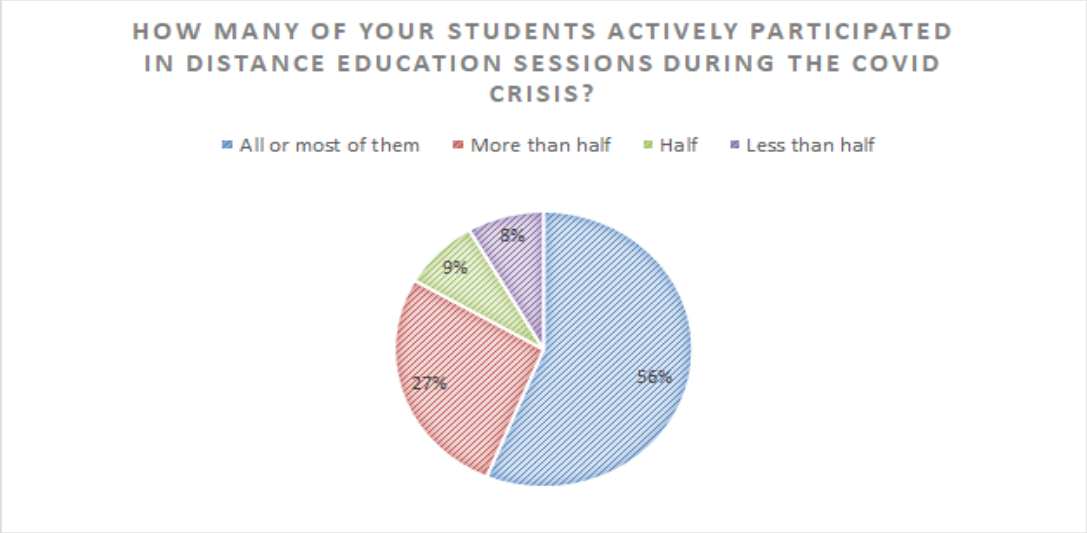

Figure 7 - Italy - Percentages of students actively participating in distance education sessions during the covid crisis.

Despite this positive engagement rate and focusing the attention on vulnerable students, 33% of teachers reported that the greatest challenge faced for integrating digital education inside the school was how to include vulnerable students.

Particularly regarding students from vulnerable families (those living in disadvantaged socio-economic conditions), the most common challenges identified by teachers participating in our survey were connected to a lack of infrastructure, such as stable internet connection (49.5%), access to digital tools (devices, computers, software) (40.4%), and lack of an adequate place to study at home (36.7%). Besides these challenges, 34.9% of teachers also stated that the main difficulties to reach vulnerable students was the lack of motivation. More than 50% of teachers declared that the schools' response to vulnerable students was partly effective.

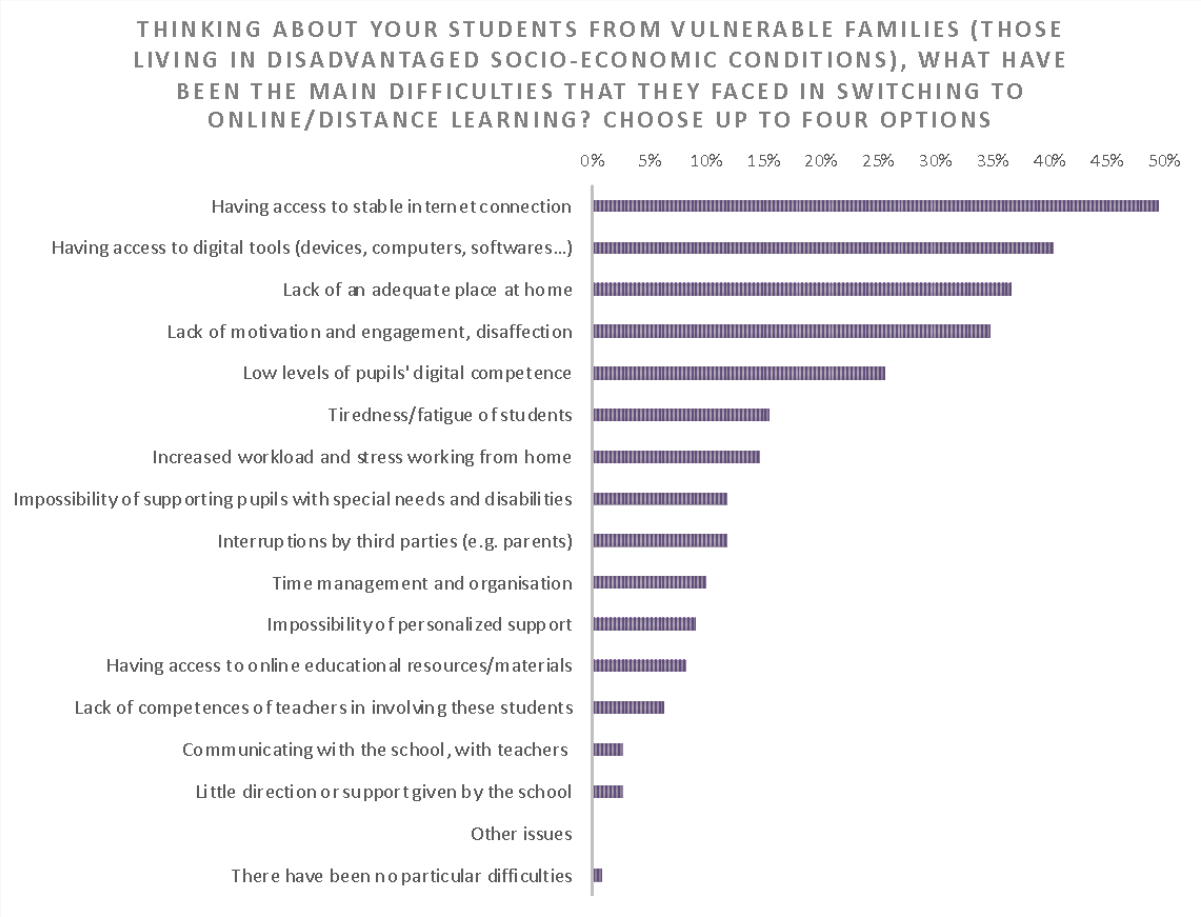

Figure 8 - Italy - Challenges faced by vulnerable students in switching to online/ distance learning

Open-ended answers provided us more information: many teachers evidenced that schools were effective in providing devices to vulnerable families, but at the same time many teachers felt alone in tackling the lack of engagement of pupils and their families coming from vulnerable contexts. This is also confirmed by the SIRD research, which asserts that after the first lockdown, only half of vulnerable students received the

reformulation of their PEI (Individualized Education Plan) and PDP (Personalized Didactic Plan)[16].

> *"Despite the distribution of devices to families who requested them, the care and support of the most vulnerable students was left to the will and initiative of the individual teachers."* - Italian *teacher* in Campania In an urban area, Literature, grammar, History, philosophy, Civic education 16-20 years of experience, 49 y.o.

> *"Devices were provided to students and in the initial phase the digital animator illustrated some digital tools. Then teachers and pupils organized themselves as they could"* - Italian teacher in Tuscany, In an urban area, Mathematics, 11-15 years of experience, F 49 y.o.

Looking beyond COVID 19 emergency and distance learning, according to our research the pandemic brought to light many critical issues of the Italian education system, not only in terms of infrastructure (connection, devices, etc.) but also in the adequacy of teachers' digital readiness and digital inclusiveness of vulnerable students. At the same time the pandemic gave teachers the opportunity to develop faster and new skills when using digital tools.

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[16] SIRD (2020). *Ricerca nazionale SIRD Per un confronto sulle modalità di didattica a distanza adottate nelle scuole italiane nel periodo di emergenza COVID-19* - https://www.sird.it/wp-content/uploads/2020/07/Una_prima_panoramica_dei_dati.pdf

The impact of COVID-19 into the educational system in Greece

During the COVID-19 lockdown, digital education has become a policy focus in Greece and the country took decisive steps to move learning online, but also faced challenges with access and implementation[17]. Although it is not possible in the framework of one chapter to fully unfold the picture of a turbulent period for the educational system of the country, especially as some effects will be visible in the long term, we will try to highlight some key points, focusing in the next sections on challenges for teachers during the transition to online - distance learning, challenges for vulnerable students and vulnerable students' inclusion in online distance education.

To start with, distance education became the daily educational reality during the last part of their school year 2019-2020, most of the school year 2020-2021, while for the school year 2021-2022 it returned only sporadically. In more detail, for the school year 2019-2020, both primary and secondary schools fully closed on the 10th of March 2020. Secondary education students returned to classes on 18th May and primary education students on 1st June till 30 June but only for 10 full teaching days and since the classes were split in half, would go to school every other day. In total in Greece primary schools were fully closed for 78 days in 2020 and secondary schools for 68 days[18]. For the school year 2020-2021, all the school levels were closed on 7th November 2020. Lyceums were open again only on 12th April 2021. Gymnasiums opened only for 2 weeks (1-18 February) and then on the 12th of April. For school year 2021-2022 a government gazette was issued in the beginning of the school year (B 4188 – 10.09.2021, Joint Ministerial Decision 111525/ΓΔ4 "Provision of synchronous distance education for the school year 2021-2022") defining specific cases when distance education would be provided. Distance

[17] European Commission (2020). *Education and Training Monitor 2020 Country Analysis*, Luxembourg: Publication Office of the European Union.

[18] OECD (2021), *The State of Global Education: 18 Months into the Pandemic*, OECD Publishing, Paris, https://doi.org/10.1787/1a23bb23-en.

education has been also applied during this school year in emergency situations (i.e. earthquakes, snowfalls).

With regards to the means used, pre-existing digital resources have been mobilized during this period, such as online libraries of digital textbooks, digital lesson plans and digital education platforms and new digital platforms for synchronous online teaching have been introduced, initially for upper secondary students and schools in regions first affected by closures[19]. More specific information of the digital platforms and tools used by educators can be found in chapter 3 of this report. With the education expenditure in Greece being lower than in most EU countries[20] the Ministry of Education and Religious Affairs (MofERA) reached out to the private sector to enhance the digital readiness of the educational system. An indirect consequence of this decision was that the discussion opened on the process followed[21] as well as on issues related to the protection of personal data [22,]. The Personal Data Protection Authority issued an Opinion in relation to synchronous distance education in primary and secondary schools on September 2020[23] in which synchronous distance education was deemed legal and some recommendations were given with a 3-month margin for their implementation, followed by a Decision on November 2021[24] where shortcomings were identified with regards to the compliance with the General Data Protection Regulation.

Another important provision of the period was that the MofERA in collaboration with mobile network providers, ensured free internet access and access by telephone for

[19] OECD (2020), *Education Policy Outlook: Greece*, available at: www.oecd.org/education/policy-outlook/country-profile-Greece-2020.pdf

[20] European Commission (2019). *Education and Training Monitor 2019 Greece*, Vol. 1, Luxembourg: Publication Office of the European Union.

[21] 174/18-11-2020 Topical question in parliament https://www.hellenicparliament.gr/UserFiles/a08fc2dd-61a9-4a83-b09a-09f4c564609d/es20201127.pdf

[22] 613/3-4-2020 Topical question in parliament https://www.hellenicparliament.gr/UserFiles/a08fc2dd-61a9-4a83-b09a-09f4c564609d/es20200408.pdf

[23] Personal Data Protection Authority (2020) Opinion 4/2020 https://www.dpa.gr/el/enimerwtiko/prakseisArxis/gnomodotisi-se-shesi-me-ti-syghroni-ex-apostaseos-ekpaideysi-stis

[24] Personal Data Protection Authority (2021) Decision 50/2021 https://www.dpa.gr/el/enimerwtiko/prakseisArxis/diadikasia-syghronis-ex-apostaseos-ekpaideysis-apo-ypoyrgeio-paideias

the digital platforms used by the MofERA for distance education, with the limitation though that this free access did not include links external to these platforms and some complains came up for charges that appeared[25]. Furthermore, a number of portable devices (laptops, tablets) for students and teachers through the NSRF and private donations, while a 200 euros voucher for ICT equipment was issued to vulnerable students and has been announced for teachers. Criticism has been levelled at the size and timing of these provisions (see also following sections on challenges for teachers during the transition to online - distance learning, challenges for vulnerable students and vulnerable students' inclusion in online - distance education).

Moreover, with regards to content, support was provided through instructions/ guidelines/ reports (such as the instructions issued by the MofERA on distance education[26], the guide to distance learning educational planning issued by the Institute of Educational Policy[27] and the reports by the Centre for Educational Psychology guiding parents and teachers on how to support children and foster emotional resilience during the pandemic[28]). Furthermore, a large number of trainings was organised (see Chapter 2). Finally, further measures for the inclusion of vulnerable groups of students include the provision of guidelines by the MofERA for providing distance learning to students with special educational needs and the addition of digital features to enable access for those with disabilities to the digital learning platform, while staff from the Educational and Counselling Support Centres continued to support schools and children with special educational needs remotely. Also, to support refugees and asylum seekers living in Greece, the UNHCR and UNICEF provided educational material, essential items such as solar lamps and, in collaboration with the MofERA, translated the guidelines for distance education into 11 languages and dialects[29]. Nevertheless, the measures taken do not appear to have ensured universal access for the student population to distance learning.

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[25] 680/12-4-2021 Topical question in parliament https://www.hellenicparliament.gr/UserFiles/a08fc2dd-61a9-4a83-b09a-09f4c564609d/es20210416.pdf

[26] https://www.minedu.gov.gr/anastoli-leitourgias-ekpaideftikon-monadon/44445-21-03-2020-odigies-gia-tin-eks-apostaseos-ekpaidefsi

[27] Institute of Educational Policy (2020). *Guide to distance learning educational planning* (in Greek)

[28] OECD (2020). *Initial Education Policy Responses to the COVID-19 Pandemic: GREECE*

[29] Ibid.

As a general note, as it also appeared from the BET interviews the incursion of COVID-effects into the education system was abrupt. Pre-existing problems were fully revealed, and new ones were created. The optional use of technology in classrooms and the reluctance of many teachers to use it, was replaced by an absolute link between educational practice and digital tools. When it first erupted, it was logical for everyone to be unprepared and it took time to teachers get acquainted and, in some cases, not to do to any distance learning at all. The majority of the teachers though showed perseverance and dedication to their work and in many cases, they did the extra mile, doing their best (and often showing inventiveness) in order to reach their students. It seems like an untapped potential existed. And all this in a climate where teachers often felt that they have not had enough support, as comes up from the open questions of our questionnaire. Comparatively to the school year 2019-2020, when the educational system appeared to be unprepared for the transition to remote teaching, in the school year 2020-2021 the transition was more smoothly, and the synchronous teaching was launched promptly after the school's closure. Teachers were now familiar with the tools and e-learning was done at a very high rate; we could even say universal. However, we should not forget that we are talking about "emergency remote teaching". Even if there were the means and the tools, conventional teaching materials were used, or in the best cases materials adopted for the online world, but in the majority of cases what was provided was not a comprehensive digital education training proposal.

This period has made it clear how important it is during a pandemic to ensure reliability and predictability of educational services for learners and parents. Even during school closures, all students should have daily and dedicated contact with educators. Hybrid and remote learning should be second- and third-best options, and only be used when keeping schools open proves impossible to preserve collective health, or students' and staff's safety[30]. In the same spirit 90.8% of the teachers who participated in the survey of the Study and Documentation Center of OLME[31] responded that distance online learning is not equivalent to the face-to-face educational process. Also, participants to the BET online survey left the following relevant comments in the open field of the questionnaire: "*No matter how well prepared we are and whatever means we have, distance learning for children cannot be applied for a long time… I think it loses its*

[30] OECD (2021), *The State of Global Education: 18 Months into the Pandemic*, OECD Publishing, Paris, https://doi.org/10.1787/1a23bb23-en.

[31] Study and Documentation Center of OLME (2021). *Aspects of distance learning during the pandemic: educational inequalities and consequences for labor rights*

power..."| "Distance education is a solution of necessity. It does not become pedagogical, nor does it replace learning through physical presence."| "The extension of the e-courses brought the mental fatigue of the students resulting in their lower performance"| "The precious time of teaching in the classroom with the children in direct contact cannot be sacrificed for any other form of education".

On the other side, on a more positive note, we should not forget the opportunities and lessons of this period, as the increased familiarity with digital tools, the opportunity to restart and revise the pedagogical methods for more participatory methods.

In any case, we want to stress out that in order to study such a complex issue with countless short- and long-term effects as the issue of distance education, the existence of data is crucial to evaluate the journey up to now and plan the next day. This includes detailed national published data of both the degree of attendance, to know how many students were left out of distance education in the different phases of this journey, as well as the impact this period had on students, teachers and parents.

Challenges for teachers

Teachers faced a wide range of **challenges** when switching to online/ distance learning, with the most commonly stated ones being pupils' **access to digital tools** (devices, computers, softwares...), involving pupils from **socially disadvantaged homes** and keeping all **pupils motivated and engaged**, all selected by 40% of the respondents. Tiredness/fatigue of students and increased workload and stress working from home followed with 37%. Finally, converting activities and content into online/distance learning also got a percentage of 20% and time management and organisation and Impossibility of personalized support with 17%. None of the participants selected the answer choice "There have been no challenges".

Figure 9 - Greece - Challenges faced by teachers in switching to online/ distance learning

Issues related to technological equipment and internet connection also emerged from the participants' answers to the open questions of the questionnaire ("*All teachers have upgraded our technological equipment and software, and all these have a cost, in order to cover the needs and the new era in education*"| "*We had to spend money on equipment, we were financially burdened in order to change the phone line for speeds up to 50 Mbps*"| "*It is necessary to renew and upgrade the equipment of teachers and students, it is often financially impossible and the equipment should be provided to everyone, employees and not, as it is the case in all companies.*").

Almost 1/4 of respondents in our survey chose students' access to a stable internet connection as a challenge faced. Tapping into relative data to explain this result, we

see that according to Eurostat data[32] Greece lags behind the European average in terms of household access to the Internet, with an apparent progress being though made during the last years. More specifically 85% of households in Greece in 2021 have access to the intenet, compared to the 92% EU average. Comparatively in 2016 this percentage was 69% for Greece and 84% for the EU average. At the same time, there also seems to be room for improvement in terms of Internet speed in the country, especially in the case of the fixed broadband speed. According to the Speedtest Global Index[33] (October 2021 data), for Greece the average fixed broadband speed is 29.68 Mbps (compared to the global average of 56.09 Mbps) and the mobile speed is 48.88 Mbps (compared to the global average of 28.61 Mbps). At the same time the internet cost in Greece remains high, with UK-based price comparison website cable.co.uk that calculates and compares the average cost of one gigabyte (1GB), ranking Greece in place 211 in the total of 230 countries included in the analysis.

In responding to the challenge of involving students in distance education, only 13.8% of teachers participating in our survey indicated to have promptly received guidance (support, advice, training). 52.9% indicated that they received guidance, but after having to deal with the new distance education reality and 33.3% indicated that they did not receive guidance. When asked by whom they received guidance, 27%, stated that they received guidance by colleagues, 25% stated that they receive guidance from head teachers/ managers, 25% from other educational institutions, 17% from educational authorities, and 4% from various other sources, including training from universities and personal work. The important role of learning and getting support from peers was also highlighted in the open question of the questionnaire ("I believe that many teachers have been helped by the exchange of information between us in social networking groups"). Also, during the interviews, the important role of the computer science teachers of the schools was highlighted, who undertook a formal role of technical support and training.

With regards to student participation, unfortunately not all students seemed to be actively participating in distance education, with **only 43.7% of the teachers**

[32] Eurostat(2021). *Digital economy and society statistics - households and individuals* https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Digital_economy_and_society_statistics_-_households_and_individuals

[33] https://www.speedtest.net/global-index

participating in our research stating that all or most of them actively participated in distance education sessions during the COVID crisis.

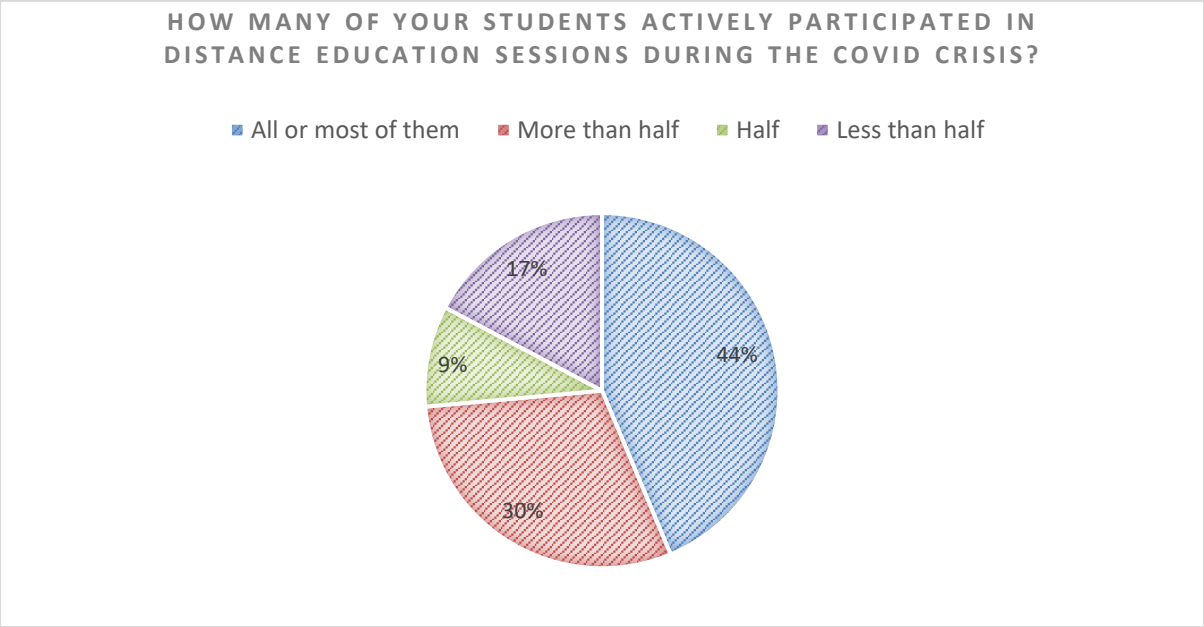

Figure 10 - Greece - Percentages of students actively participating in distance education sessions during the COVID crisis

Challenges for vulnerable students and vulnerable students' inclusion in online - distance education

Focusing more on **students from vulnerable families** (those living in disadvantaged socio-economic conditions), the most identified **challenges** by the teachers participating in our survey were having access to **stable internet connection** (52%), having **access to digital tools** (devices, computers, software…) (46%), and **lack of an adequate place at home** (30%). Lack of motivation and engagement, disaffection (29%), low levels of pupils' digital competence (26%) and tiredness/fatigue of students (16%). Only 2% of respondents stated that "There have been no particular difficulties". Furthermore, interestingly enough, only 5% chose lack of competences of teachers in involving these students and only 3% chose little direction or support given by the school.

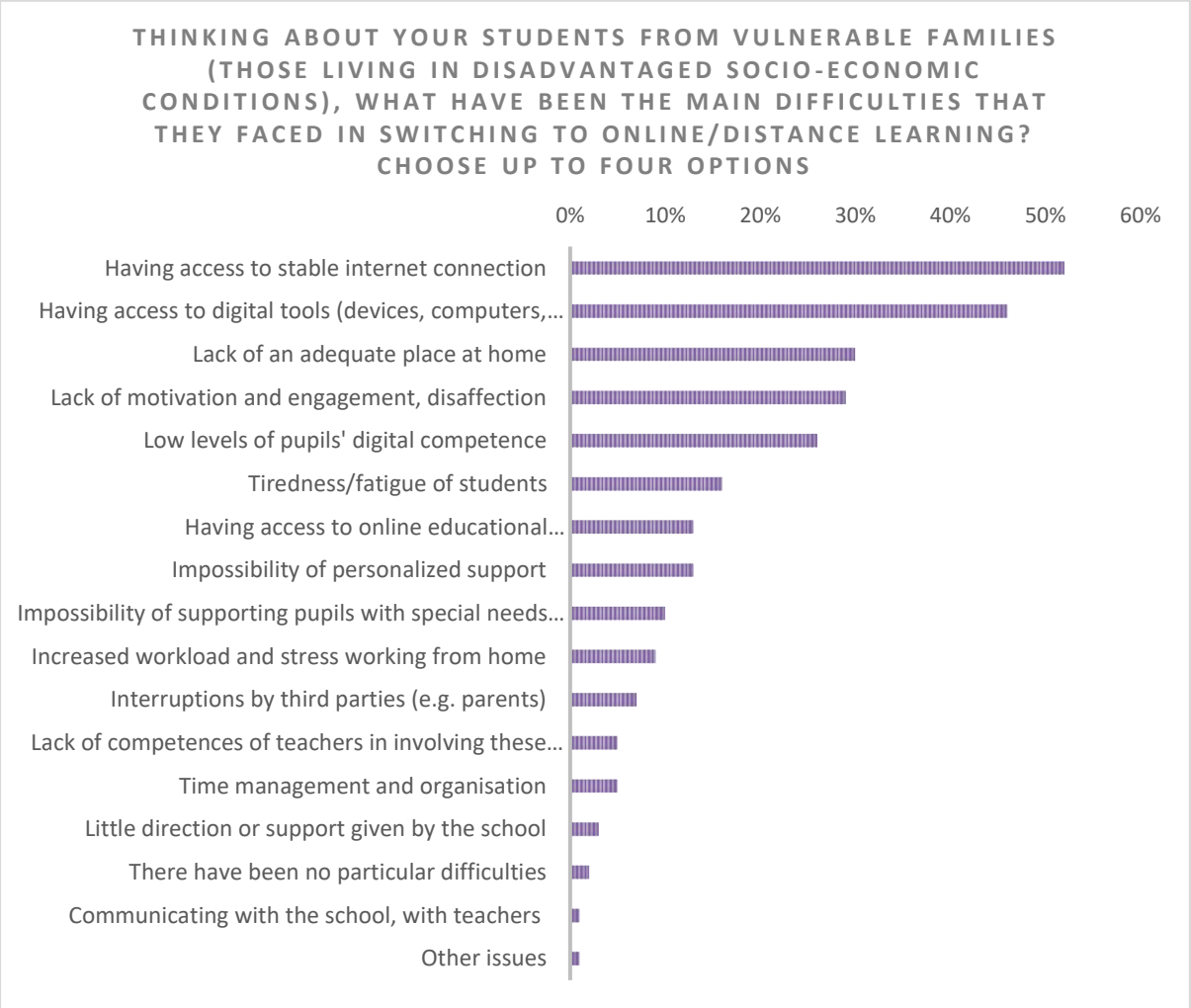

Figure 11 - Greece - Challenges faced by vulnerable students in switching to online/ distance learning

As ActionAid's "research on inequalities in education during the pandemic period" has shown, these inequalities were alleviated during this period[34]. And according to the OECD[35] these inequalities should be taken into account and the recovery of the crisis should address them. Countries should make very deliberate efforts and commit resources to provide additional targeted student support to address the reduced learning opportunities experienced by students from some social groups and this support offered should take into account that schools are both social hubs that support

[34] ActionAid (2021), *Research on inequalities in education during the pandemic period* [in Greek]
[35] OECD (2021), *The State of Global Education: 18 Months into the Pandemic*, OECD Publishing, Paris, https://doi.org/10.1787/1a23bb23-en.

the development of students' socioemotional skills and well-being and centres of their local communities.

Getting back to what happened in our educational system during this period, with regards to **whether the issue of vulnerable students' inclusion in distance education was tackled effectively in their school**, almost half (47.7%) of the teachers indicated that the response was partly effective, 22.1% indicated that it was very effective, while, on the other hand, **1 out of every 4 teachers** (25.6%) **indicated that the response was not effective**. Interestingly, only 4.7% indicated that this was not a concerning issue in their school.

When asked to explain their answers many teachers focused on the challenge regarding the lack of access to digital tools (devices, computers etc), mentioning the **provision of some devices**/ tablets/ pcs to vulnerable students at some point, and giving the teachers the option to work from the school. Nevertheless, the response seemed not to be sufficient to answer to the associated needs, as there were not enough devices provided when needed, while the problem of the existence of a stable internet connection still existed. Furthermore, except of the students that did not have access to any digital device to connect to the online classroom, there was also a percentage of students that were using devices not fully suitable for the educational process (e.g. cell phones). Other relative support activities mentioned were, offering of **guidance** and **technical support** and constant **communication with the families**.

Teachers also mentioned specific categories of students, like students who do not speak the **language**, with the proposal also for the development of digital learning tools that utilize other (soft) skills, for students who have not developed the skills of language comprehension, reading, writing as a solution, children in **accommodation structures** that could not enter at all the online classes, as they did not have the tools and they were not motivated, but also children living in **remote areas** that were facing connectivity issues. In the open questionnaire question a teacher wrote characteristically: "*Not all regions of Greece are the same. Not all children live in Kifissia and Ekali*".

Partly connected to the challenge of the impossibility of personalized support, some participants also referred to the important role of the educators of the integration classes (τμήματα ένταξης), educators of parallel support (εκπαιδευτικοί παράλληλης στήριξης) and reception classes (τάξεις υποδοχής) and special education teachers, while the problem of the lack of parallel support from home for students with disabilities was also highlighted.

Furthermore, there were some participants who reported either that there were no problems related to inclusion in their school ("*No such issue arose. All students used simple platforms so that no lessons were missed*"| "*As a private school it has no students from vulnerable social groups")* or that that these problems were addresses effectively ("*A solution was found as soon as the school was informed about the problem*"| "*We took into account the requests of the parents and they were covered to a satisfactory degree*"). There was also a modest opinion on intermitted participation ("*There was participation but intermittent due to fatigue and slow pace of learning objectives*").

And on the other hand, there were also some teachers in our research that describe the situation in gloomier colours, either by expressing their distrust that vulnerable students' inclusion in distance education can be achieved ("I think that this cannot happen"), describing resignation from the inclusion process ("Students and parents simply gave up the process, as did the school"). Some of them also focused on the role of school management ("Insufficient communication of school management with the students to solve any problems", "management indifference"), students ("The school was supportive but the children were indifferent"/ "Some students were steadily distancing themselves despite the incentives to participate") and parents/ families ("The possibilities of intervention and support of children in distance education who are unable to concentrate by the teachers are limited, the burden falls on the family, which is often also unable to support the children"/ "Difficulties in working with families, the family did not cooperate as much as they should because they hoped that the schools would open soon").

The impact of COVID-19 into the educational system in Romania

The Ministry of Education published on their website the guides for organising and carrying out the activities in school education establishments in the 2020/2021 school year, in the context of the COVID-19 epidemics.

After the opening of the 2020/2021 school year on 14 September 2020, the Ministry of Education initiated the procedure for monitoring the dynamics of the scenarios related to the functioning of the school education establishments, at national level, which is influenced by the evolution of the epidemiologic situation in each county.

The interviews showed that it was a shock for everybody. We were not prepared at all in training for the teachers, infrastructure, Internet connection. In each training course for MEN or University initiatives there were training modules, teachers participated but the practical part was always avoided because it was a traditional system in which we believed that we could learn only face to face. Before the pandemic we took a few basic digital courses, now it has become mandatory to adapt to online teaching. We had only a few people that knew how to use some tools. For example, for Google we had only 5 people certified for Romania. The school was a traditional one. We had only one way of delivery. Digital teaching was only in a few schools. Digital knowledge and training was almost non-existent.

There were no block courses for a group of teachers. Few teachers only developed their individualized digital competences, like a search and improve yourself mode. For the students, there were only courses from computer science or ICT classes, but slightly accentuated in the urban environment. In rural areas there are some classes equipped with computers but there is no Internet.

We also have some limitations and wrong understanding related to how to build these learning experiences in digital formal. Many teachers just transferred their classes in digital format – 4 hours in class = 4 hours in online; that is a bad approach because of digital burnout and lack of not knowing how to use various digital tools.

After 1 and a half years I saw a lot of connection and availability from my colleagues to solve the situation. After covid we have a lot of improvement: we have access to the Internet in many schools and many teachers had to do some digital training to cope with the situation. It was a spectacular step for Romanian education. 5 years in advance. Because it would have been very difficult to gather so many people from the system and train them before covid. Also there is a better attitude related to digital tools, delivering in hybrid or blended or only online; also the attitude improved for learning in general. It would be a pity to lose these competencies and not to transfer them in future activities.

We discovered that every teacher can do something even though they weren't familiar with digital instruction. We learned to learn and work collaboratively. I discovered that we can learn from our students and that we can collaborate with parents very well.

The need for digitization has increased greatly, to learn digital tools to help teachers in teaching and to cope with requirements that were not asked before, especially teachers who do not teach informatics, who were close to retirement and they refused to use the computer.

Schools closed in September 2019. In the context of the COVID-19 pandemic, to support the catch-up due any lagging behind in learning and the design of teaching activities for the 2020/2021 school year, subject-based methodological guidelines have been developed and made available online. After the opening of the 2020/2021 school year on 14 September 2020, the Ministry of Education and Research initiated the procedure for monitoring the dynamics of the scenarios related to the functioning of the school education establishments, at national level, which is influenced by the evolution of the epidemiologic situation in each county.

In the context of the COVID-19 pandemic, the Government Extraordinary Decree no. 144/2020 laid down the legislative framework for providing students with mobile equipment, providing medical protection equipment and ensuring the minimum hygiene and sanitation conditions in public schools which are not connected to the water supply and sewage network. Also, in this pandemic context, the School at Home programme is implemented, for which the Order of the Education and Research Minister no. 4738/2020 approved the necessary number of electronic devices with an internet connection, as well as the criteria for the distribution of the devices purchased in the programme to primary, lower secondary and upper secondary students in full-time education (i.e. the preparatory grade, grades 1-12, the vocational school). Therefore, by December 2020, a number of 250,000 tablets have been delivered.

Government Decision no. 756/2020 has approved the National Programme Safe Education which provides for allocations from the Budget Reserve Fund at the Government's disposal. By 19 October 2020, under this programme, other 58,266 electronic devices (tablets and laptops) have been purchased.

Teachers faced a wide range of **challenges** when switching to online/ distance learning, with the most commonly stated ones being **keeping all pupils motivated and engaged** (42.4%), **increased workload and stress working from home** (36.1%), **pupils' access to digital tools** -devices, computers, softwares…- (31.2%), **involving pupils from socially disadvantaged homes** (24.4%).

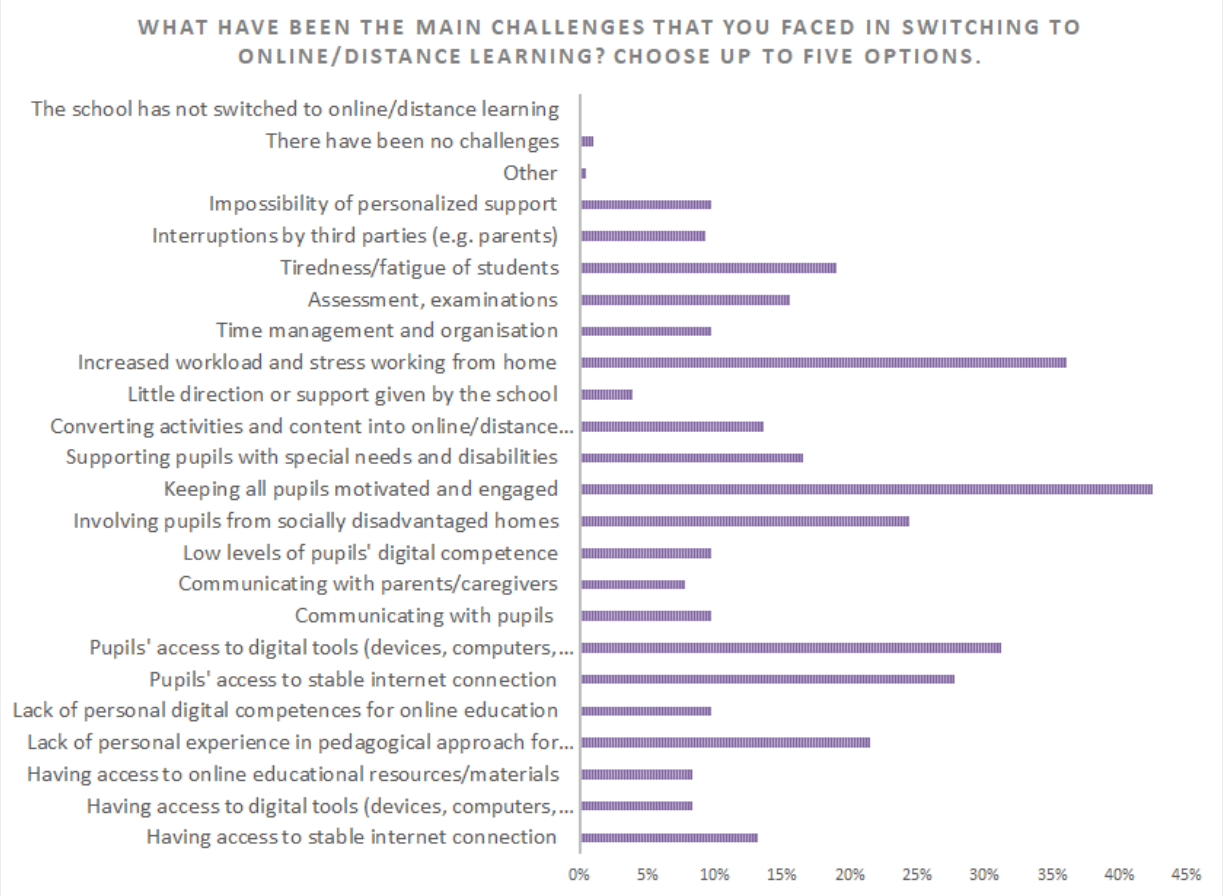

Figure 12 - Romania – Challenges faced by teachers in switching to online/ distance learning

Amongst the challenges faced, **pupils' access to a stable internet connection** proved to be common among many respondents, getting a percentage of 27.8%. Tapping into relative data to explain this result, we see that according to the International Telecommunication Union (ITU) World Telecommunication ICT Indicators Database 74% of the population in Romania (2019 data)/ 76% of the population in Greece (2019

data) are using the internet, compared to the 87% average of the Euro area (2019 data). Furthermore with regards to internet speed in the country, according to the Speedtest Global Index (May 2021 data), for Romania the average fixed broadband speed is 193.47 and the mobile speed is 57.01, compared to the global average fixed broadband speed that is 105.15 and mobile speed is 54.53.

Amongst the challenges faced, access to a stable internet connection proved to be common among many respondents, getting a percentage of xx%. Tapping into relative data to explain this result, we see that according to the International Telecommunication Union (ITU) World Telecommunication ICT Indicators Database /74% of the population in Romania (2019 data) are using the internet, compared to the 87% average of the Euro area (2019 data). Furthermore with regards to internet speed in the country, according to the Speed test Global Index (May 2021 data), for Romania the average fixed broadband speed is 193.47and the mobile speed is 57.01 compared to the global average fixed broadband speed that is 105.15 and mobile speed is 54.53.

In responding to the challenge of involving students in distance education, 45% of teachers participating in our survey indicated to have received guidance (support, advice, training) but after having to deal with a new distance education reality. Only 23% indicated to have promptly received guidance and 32% to not have received guidance. From the ones that had received guidance, 31.2% received it from colleagues, 31.2% received it from head teachers/ managers, 12.7% from educational authorities, 7.3% from other educational institutions and 5.9% from other stakeholders.

Unfortunately, not all students seemed to be actively participating in distance education, with the percentage of teachers that stated that all or most of them actively participated being 64.8%. 24.6% of the respondents stated that more than half of them actively participated, 3.4% stated that it was half of them and 7.3% that it was less than half.

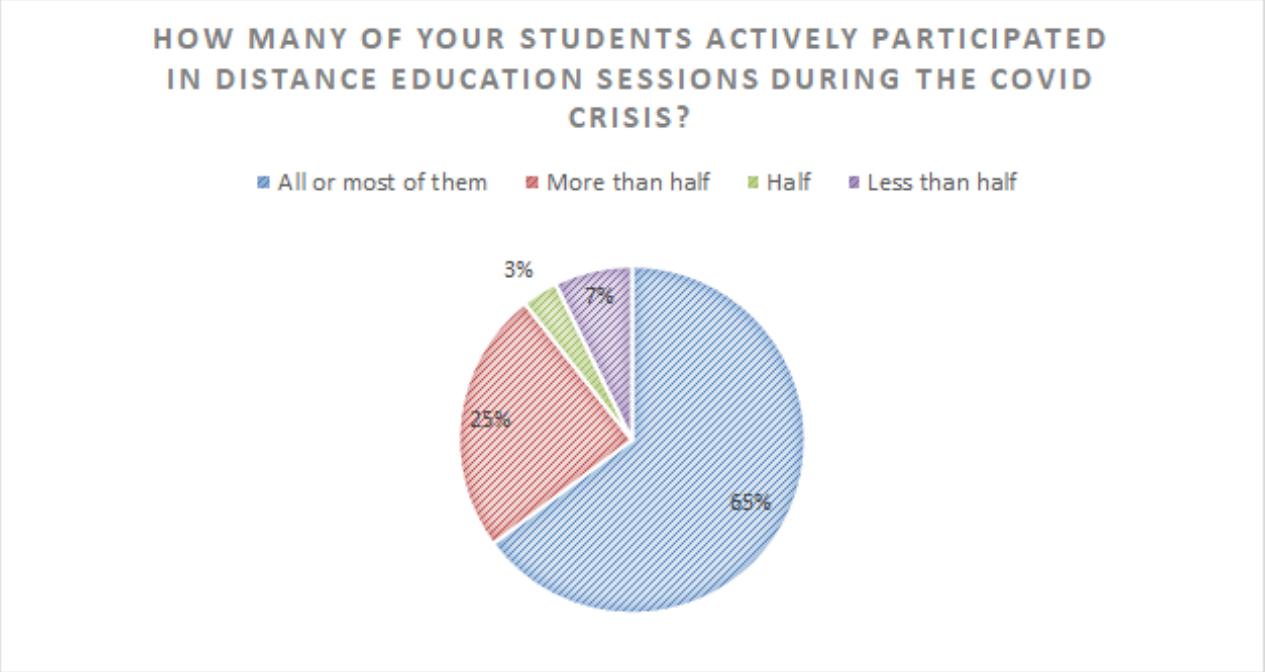

Figure 13 - Romania – Challenges faced by teachers in switching to online/ distance learning

Focusing more on students from vulnerable families (those living in disadvantaged socio-economic conditions), the most commonly identified challenges by the teachers participating in our survey were connected to lack of infrastructural condition, such as stable internet connection (39%), access to digital tools (devices, computers, softwares…) (34.1%), and Lack of an adequate place at home (29.3%). Beside these challenges, 34.6% of teachers state also that the main difficulties to reach vulnerable students has been the lack of motivation.

Finally, 48.9% of teachers participating in the survey declared that the response of their school in tackling with vulnerable students was very effective, 42% believe that it was partly effective, 6.9% that it was not effective and for 2.3% this was not a concerning issue in their school.

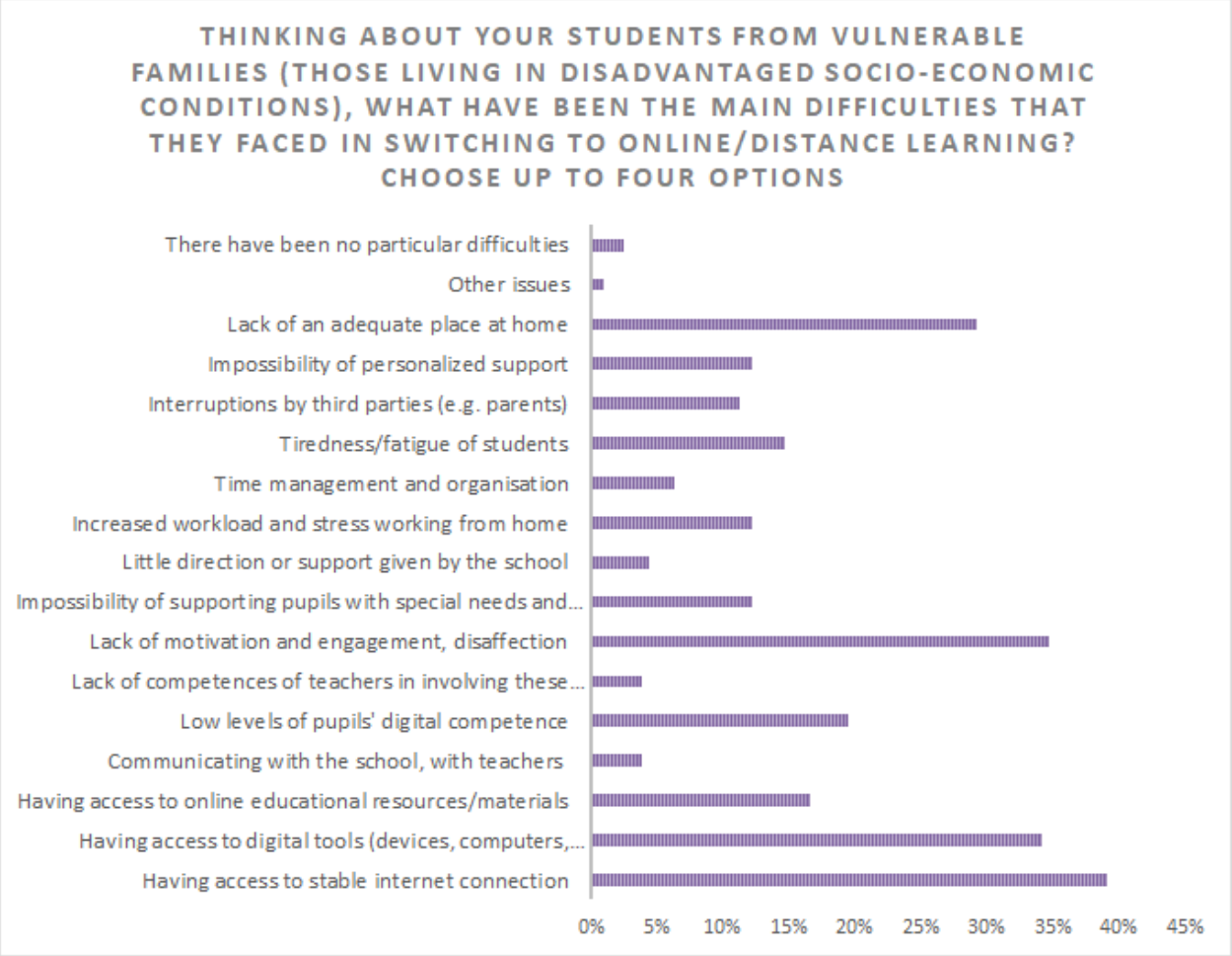

Figure 14 - Romania – Challenges faced by vulnerable students in switching to online/ distance learning

The impact of COVID-19 into the educational system in Portugal

On November 19th, 2020, Organisation for Economic Cooperation and Development (OECD) published a policy brief on the "The impact of COVID-19 on student equity and inclusion: Supporting vulnerable students during school closures and school re-openings", describing OECD Member Countries' initiatives to address the different needs of vulnerable students during the COVID-19 pandemic. Beyond school closures, it also examines the issue of school re-openings by presenting countries' current measures, including Portugal, and providing policy pointers aimed to ensure that the pandemic does not further hinder the inclusion of vulnerable students in education systems. For example, approximately 800 Portuguese schools across the country hosted children whose parents worked in essential services, as well as provided food support to students from disadvantaged economic background, families with children younger than 12 years old (who did not return to school until after the summer holidays 2020) received extra financial support by the government (OECD, 2020)[36].

"Children benefit a lot from being present in schools, in the classroom, at the playground, socializing with their peers, and the school turns out to be the support for many of these students, both in terms of having some conditions there to be able to study and access to certain situations, such as the school library, as well as in terms of food, because there are many children who even, at the time of the pandemic, had to go to school to get food to eat, and maybe it was the only meal they had during the day. (Alexandra Rodrigues)

The impact of COVID-19 on the country's educational system was evident. According to the interviews made in this study, in the majority of cases, the distance learning

[36] OECD (2020). *The impact of COVID-19 on student equity and inclusion: Supporting vulnerable students during school closures and school re-openings. Contributing to a Global Effor*t, OECD https://www.oecd.org/coronavirus/policy-responses/the-impact-of-covid-19-on-student-equity-and-inclusion-supporting-vulnerable-students-during-school-closures-and-school-re-openings-d593b5c8/

accentuated inequalities among students, especially for those who already had difficulties in the classroom. In the beginning of the pandemics, one of the biggest problems were situations where student`s hadn`t the necessary technological resources to study at home.

On the other hand, the pandemics have had positive consequences, such as valuing school as a place where social interactions are reinforced through physical and face-to-face contacts.

> "The human part here is essential. In other words, teachers at school are essential to students, for learning it is essential that students have contact with their teachers." (Luísa Paixão)

Also, more students understood, and even some teachers, that new technologies can have a pedagogical application and can be a great help for learning purposes. Many students didn't have much of this notion: they knew how to use a cell phone well, but more on the social media side, but weren't that aware that the cell phone, the computer and the digital world allowed them to progress in school learning. This made them feel valued.

The 8th of April 2020 brought the announcement of the set of measures for distance learning, by the Prime Minister (DGE, 2020)[37]. The Ministry of Education, in partnership with RTP (Portuguese television channel), launched during the month of September 2020 the #EstudoEmCasa[38] (#StudyAtHome) 2020/2021, a content broadcasted from 9 am to 5:50 pm, with contents organized for different academic years, a tool to complement the work of teachers with their students. The initiative aimed to grant students access to educational content relevant to the development of their learning in any part of the national territory. The General Direction of Education (Direção-Geral de Educação - DGE) developed a Roadmap[39] with 9 guiding principles to support students that use #StudyAtHome.

Also, the DGE, in collaboration with the National Agency for Qualification and Professional Education (ANQEP), built the website "Apoio às Escolas"[40] (Support to

[37] DGE. (2020). Informações às Escolas.. https://www.dge.mec.pt/informacoes-escolas
[38] RTP. #EstudaEmCasa. https://www.rtp.pt/play/estudoemcasa/
[39] DGE. (2020). 9 Princípios orientadores para acompanhamento dos alunos que recorrem ao #EstudoEmCasa. https://www.dge.mec.pt/sites/default/files/escolas_estudoemcasa.pdf

[40] DGE. Apoio às Escolas. https://apoioescolas.dge.mec.pt/

Schools) with a set of resources to support schools in the use of teaching methodologies, which allowed them to continue teaching and learning processes at distance.

The government also launched a program, the "Escola Digital"[41] (Digital School), with the objective of providing schools, students and teachers with equipment and Internet access, as well as quality digital educational resources. The program also aimed to promote the professional development of teachers, for the improvement of professional skills throughout life, as well as for the development of collaborative practices.

"If you ask me what the impact is, I always see a positive impact – people were shaken, everything was shaken, and we are aware that the school no longer corresponds to the model of society in which we are living. Now we gained that awareness and that was the positive aspect." (Isabel Catarino)

"Many schools still don't have a capable Internet network, they don't have interactive whiteboards, they don't have computers or tablets for all the students in the classroom. There are schools that don't have Internet network in every classroom and this is a big obstacle. Before, we could say that the obstacles were the lack of skills on the part of teachers, of digital skills, which now doesn't happen." (Luísa Paixão)

Before COVID-19, the technological conditions of the majority of schools were insufficient. Teachers and schools did the best they could with the resources they had.

Teachers faced a wide range of challenges when switching to online/distance learning, with the most commonly stated ones being "Increased workload and stress working from home", chosen by 39.6% of respondents, followed by "Keeping all pupils motivated and engaged", chosen by 36.6% and "Pupils' access to stable internet connection" chosen by 32.7% of respondents. None of the participants selected the answer choice "There have been no challenges".

[41] DGE. Escola Digital. https://escolamais.dge.mec.pt/acoes-especificas/escola-digital

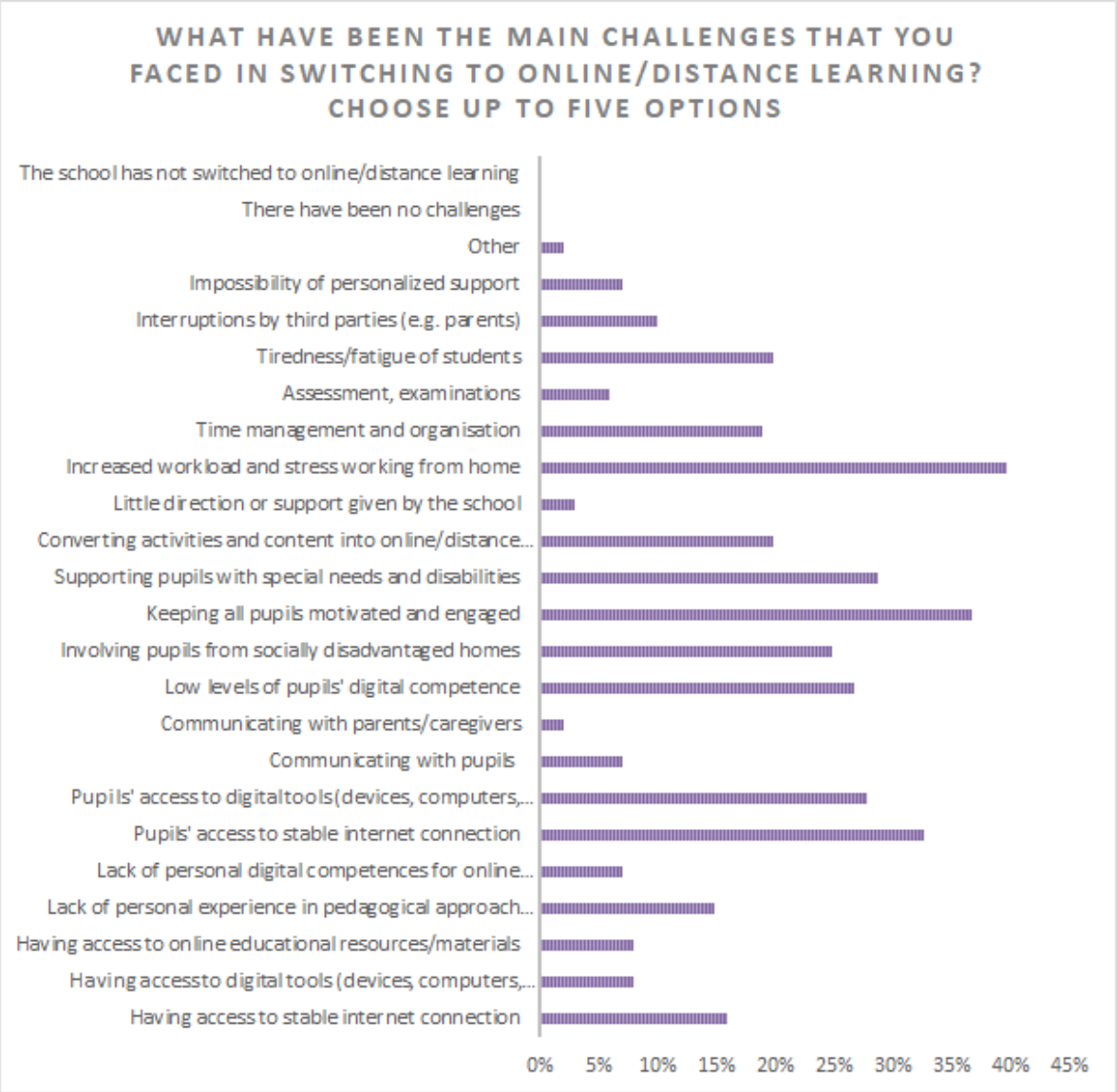

Figure 15 - Portugal – Challenges faced by teachers in switching to online/distance learning

Amongst the challenges faced, pupils' access to stable internet connection proved to be common among many respondents, getting a percentage of 32.7%. Tapping into relative data to explain this result, we see that according to the International Telecommunication Union (ITU) World Telecommunication ICT Indicators Database 78% of the population in Portugal (2020 data) are using the internet, compared to the 88% average of the European Union (2020 data). Furthermore with regards to internet speed in the country, according to the Speedtest Global Index (October 2021 data, median calculations), for Portugal the fixed broadband speed is 93.59 Mbps and the mobile performance is 39.10 Mbps, compared to the global average (data from

October 2021) fixed broadband speed that is 56.09 Mbps and mobile speed is 28.61 Mbps.

"Regarding the issue of modernization of equipment, a problem I hear a lot in schools is that the internet connection is not fast for schools where there are 300 or 400 students, and this immediately prohibits the use of multimedia (videos in education, YouTube,...) because it requires a very strong load, or applications of augmented or virtual realities...this can be an obstacle." (Filipe Santos)

In a Diversity Webinar held in October 2020, it was stated that, in Portugal, "schools and public and private organisations partnered in order to provide laptops and internet access to some students from disadvantaged backgrounds. When it was not possible, in cooperation with Post Office Services and Civil Society, like the National Scouts Group, a mechanism was implemented allowing students who lived far from schools or without access to the Internet to receive hard copies lessons and tasks from schools. Deliveries of homework/assignments on paper to students and the following collection and return to the teachers were also organised" (OECD, 2020)[42].

In responding to the challenge of involving students in distance education, only 22.2% of teachers participating in our survey indicated to have promptly received guidance (support, advice, training). 48.9% indicated that they received guidance, but after having to deal with the new distance education reality and 28.9% indicated that they did not receive guidance. When asked by whom they received guidance, the biggest percentage of respondents, 40.6%, stated that they received guidance by colleagues, 28.7% stated that they receive guidance from head teachers/managers, and only 18.8% from educational authorities, 10.9% from other educational institutions and 11.9% from various other stakeholders, including online initiatives developed by publishers and teacher groups, virtual schools, webinars, trainings, Pedagogical Council and NGO's support, and school library network.

Within COVID-19 many of the skills were reinforced informally. For example, when teachers did not know how to use the Zoom, asked ICT colleagues for help, and informal learning communities were quickly established.

Unfortunately, not all students seemed to be actively participating in distance education, with **only 63.3% of the teachers participating in our research stating that all**

[42] OECD. (2020). *The impact of COVID-19 on student equity and inclusion: Supporting vulnerable students during school closures and school re-openings*. https://www.oecd.org/coronavirus/policy-responses/the-impact-of-covid-19-on-student-equity-and-inclusion-supporting-vulnerable-students-during-school-closures-and-school-re-openings-d593b5c8/

or most of them actively participated in distance education sessions during the COVID-19 crisis.

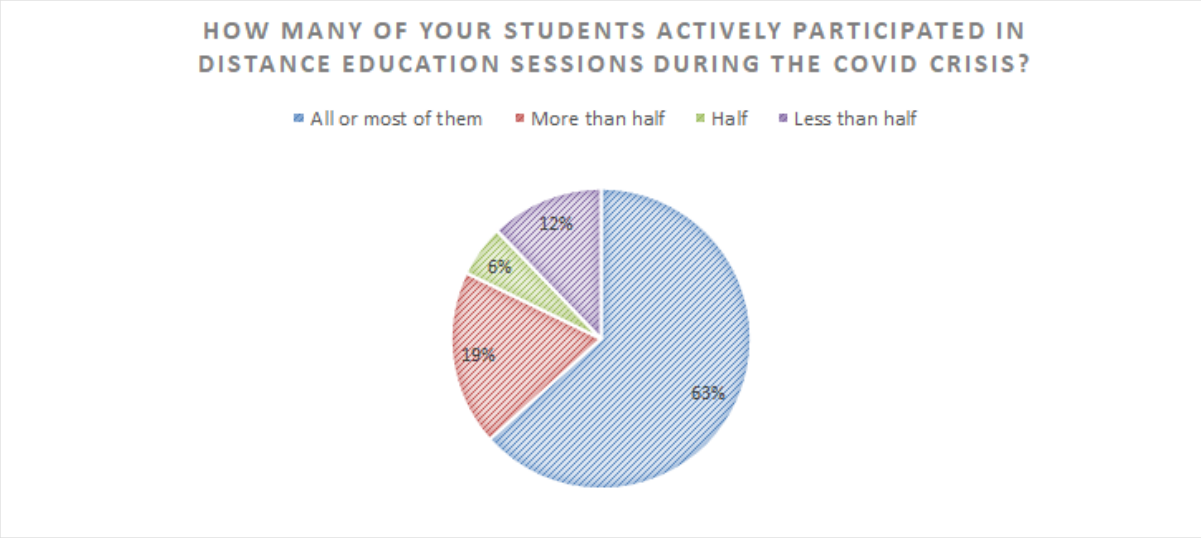

Figure 16 - Portugal – Challenges faced by teachers in switching to online/distance learning

Focusing more on students from vulnerable families (those living in disadvantaged socio-economic conditions), the most commonly identified challenges by the teachers participating in our survey were "Having access to stable internet connection" (50.5%), "Having access to digital tools (devices, computers, softwares, ...)" (44.6%), and "Lack of an adequate place at home" (34.7%), followed by "Lack of motivation and engagement, disaffection" (31.7%) and "Low levels of pupils' digital competence" (26.7%) and "Impossibility of personalized support" (20.8%). Only 2% of respondents stated that "There have been no particular difficulties". Furthermore, interestingly enough, only 2% chose "Lack of competences of teachers in involving these students" and only 3% chose "Little direction or support given by the school".

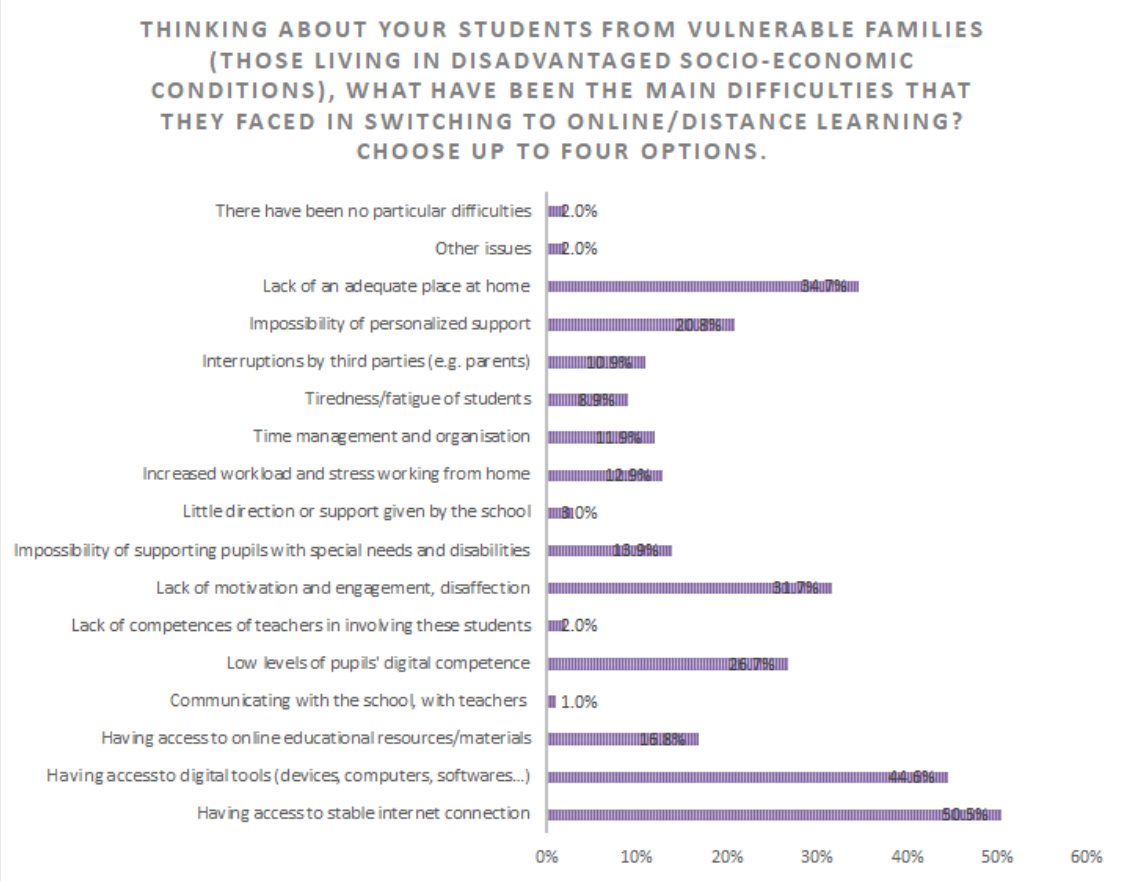

Figure 17 - Portugal – Challenges faced by vulnerable students in switching to online/distance learning

With regards to **whether the issue of vulnerable students' inclusion in distance education was tackled effectively in their school, more than half (53.3%) of the teachers indicated that the response was partly effective**, 28.9% indicated that it was very effective, while, on the other hand, 14.4% indicated that the response was not effective. Interestingly, only 3.3% indicated that this was not a concerning issue in their school. When asked to explain their above answers the teachers were divided. On one hand, the positive answers included the support given, by the offers of tablets, from psychologists and social workers, diversified remote response and offer of printed resources, as well as excellent organizational capacity and support for both teachers and students. On another hand, there were clearly some issues to be solved, when mentioned that the technologies provided to students were not always in conditions of use, the school did not have enough equipment to provide to the students, less effective in ensuring that all students actively participated in online classes (e.g. cameras turned off), students did not connect, some had no support at home, referring to the process being slow and confusing. It was also shared that in the first confinement no alternatives were created for these children, little training and available resources,

difficulties in digital communication, connectivity issues and no personal relationship with and among students.

Despite the challenges, most of the teachers think that the educational system was able to react and find solutions in a short period of time.

> "I think we learned a lot about the students and their families, I think we will be closer, with a much greater connection. There was a concern of teachers with the welfare of students when it was distance learning, and parents also somehow wanted to know what the teachers were doing, more than when children were at school, and I am speaking according to the reality in which I am integrated... (...)
>
> We also learned that physical and face-to-face contact is essential, because it's only when we don't have that we value things." (Isabel Catarino)

Chapter 2

TEACHER COMPETENCE FRAMEWORKS AND LEARNING IN THE FIELD OF DIGITAL EDUCATION

Overview

The **European Framework for the Digital Competence of Educators** (DigiCompEdu)[43] is a framework for the development of educators' competencies needed to seize the potential of digital technologies for enhancing and innovating education. The framework is aimed to help Member States in their efforts to promote the digital competencies of their citizens and boost innovation in education, whilst it is also offering a common frame of reference, language and logic.

The DigiCompEdu proposes 6 areas of comptencies that`fall into 3 larger categories, educators' professional competencies, educators' pedagogic competencies and learner's competencies. For the needs of BET we will focus on the main DigiCompEdu category, educators' pedagogic competencies and the 4 skill areas it includes: Digital resources, Teaching and Learning, Assessment, Empowering Learners.

The following figure represents the 6 areas of the DigiCompEdu. The circle in the centre contains the areas which are of main interest for the BET project.

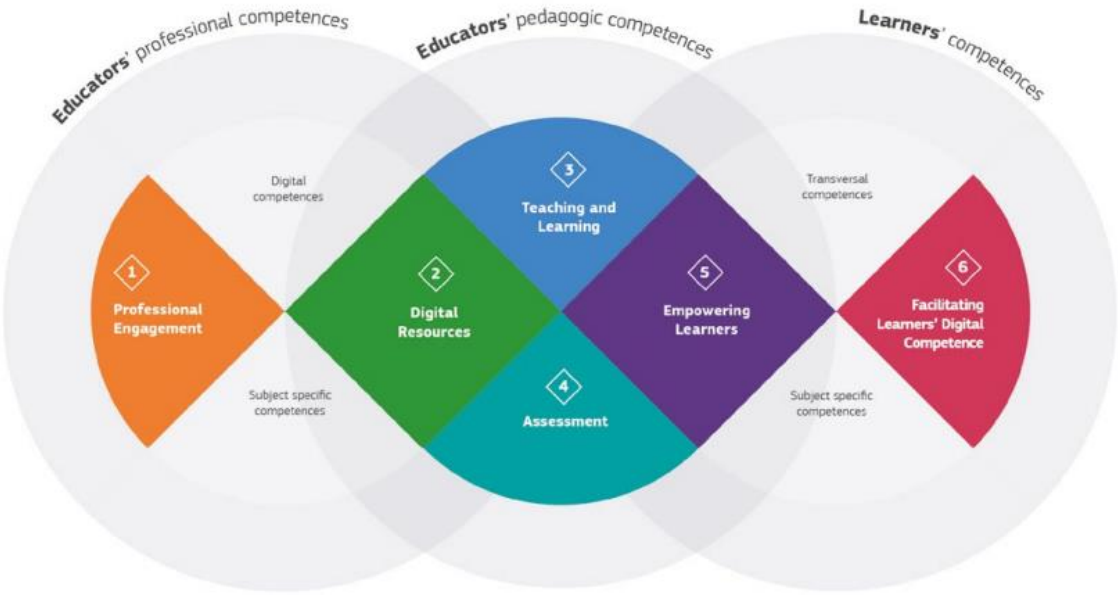

Figure 18 - The European Framework for the Digital Competence of Educators (DigiCompEdu)

[43] Punie, Y., editor(s), Redecker, C., *European Framework for the Digital Competence of Educators: DigCompEdu* , EUR 28775 EN, Publications Office of the European Union, Luxembourg, 2017, ISBN 978-92-79-73718-3 (print),978-92-79-73494-6 (pdf), doi:10.2760/178382 (print), 10.2760/159770 (online), JRC107466. http://dx.doi.org/10.2760/178382

Important teacher competencies in digital education

When the participants in our research were asked to select **which teacher competencies they consider being the most important in the field of digital education, the most popular choice was the use of digital technologies to enhance inclusion, personalisation, and learners' active engagement**, with a percentage of 48.5%. Managing and orchestrating the use of digital technologies in teaching and learning followed with a percentage of 29.8%, while the other two skill areas gathered smaller percentages. Sourcing, creating and sharing digital resources was chosen by 13.5% of respondents and using digital technologies and strategies to enhance assessment by 8.2% of respondents.

When asked about specific skills in the skills areas that they had selected, **differentiation and personalisation**, defined as using digital technologies to address learners' diverse learning needs, by allowing learners to advance at different levels and speeds, and to follow individual learning pathways and objectives, was chosen as the most important skill (22.3%), followed by **accessibility and inclusion**, defined as ensuring accessibility to learning resources and activities, for all learners, including those from disadvantaged backgrounds and vulnerable students (16.8%) and **teaching**, defined as planning for and implementing digital devices and resources in the teaching process, so as to enhance the effectiveness of teaching interventions and experimenting with and develop new formats and pedagogical methods for instruction, followed with 13.6%.

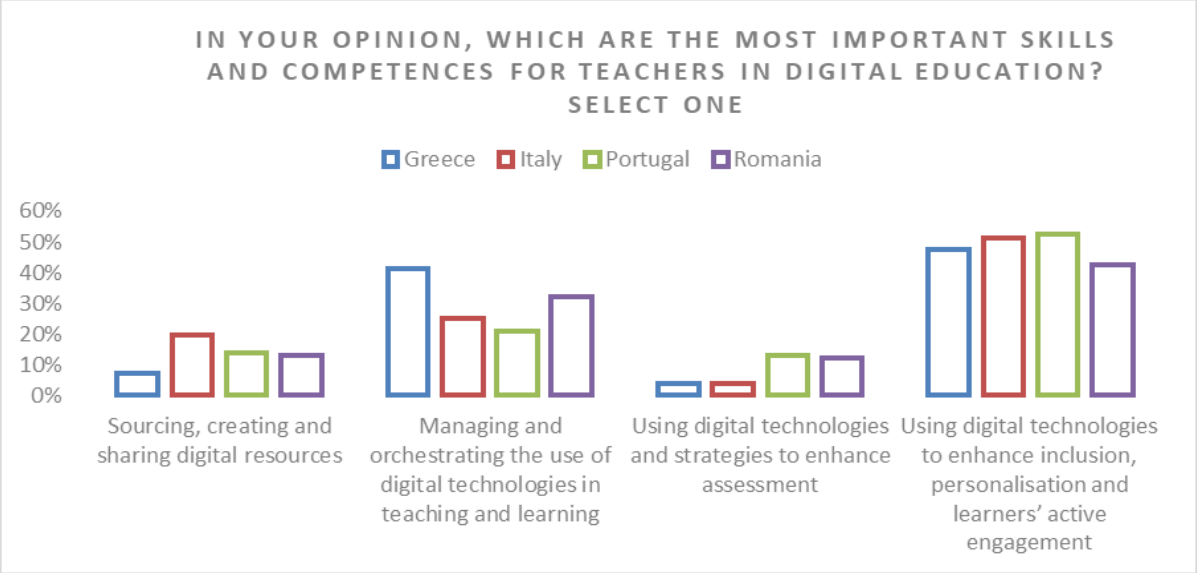

Figure 19 - Most important skills and competencies for teachers in digital education

Teacher trainings on digital education

The majority of the participants in the BET survey (58.3%) **had participated in a training on the use of digital technologies in teaching and education during the last year**, while 24.8% had participated in a training on digital technologies. 28.8% indicated that they did not attend any training on these topics. Some interesting variations were observed amongst the different countries, with 76% of the participants of Greece having participated in a training on the use of digital technologies in teaching and education during the last year, compared to 47.7% of the participants in Italy, 54.5% in Portugal and 55.1% in Romania.

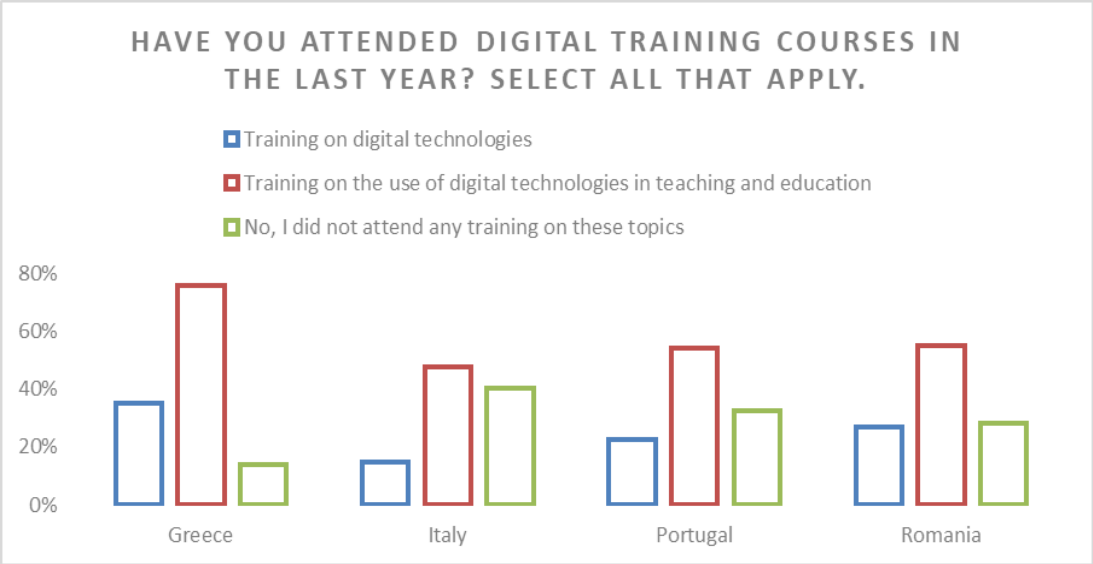

Figure 20 - Participation in digital training courses during the last year

These trainings were provided by an Educational Institution - Ministry of Education or related authorities, agencies (45.2%), or by a private training organisation (15.7%), by an NGO (10.1%) or by other stakeholders (5.9%). Once again, some interesting differentiations among the countries were observed, as presented in the following graph, with educational institutions (Ministry of Education or related authorities, agencies) undertaking a bigger percentage in the case of Greece comparatively to the other countries (70% for Greece, 33% for Italy, 41.6% for Portugal, 36.1% for Romania). Also, the role of NGOs seemed to be more enhanced for Romania, compared to the other countries (22.4% for Romania, 5% for Greece, 11% for Italy, 2% for Portugal).

Figure 21 - Digital training courses providers

Teacher preparedness for digital education

But how prepared do teachers actually feel for using digital technologies for education and teaching? **More than half of the participants in our survey** (51.5%) **agreed that they feel well prepared for using digital technologies for education and teaching**, and 22.4% even strongly agreed to this statement. 18.6% neither agreed nor disagreed, 6.5% disagreed and 1.1% strongly disagreed. Interestingly though, when confronted with the question "Most of my **colleagues** in my school are well prepared for using digital technologies for education and teaching", the agreement percentages drop. In this case, 33.3% agreed with the statement and only 5.1% strongly agreed, while 33.9% neither agreed nor disagreed. In this case **almost 1 out of 4** (23.7%) **disagreed** and almost 4.1% strongly disagreed.

While in the case of their own preparedness, no important country differences were observed, when asked about their colleagues, teachers from Romania seem to be more confident about their colleagues. The country analysis is presented in the following graph.

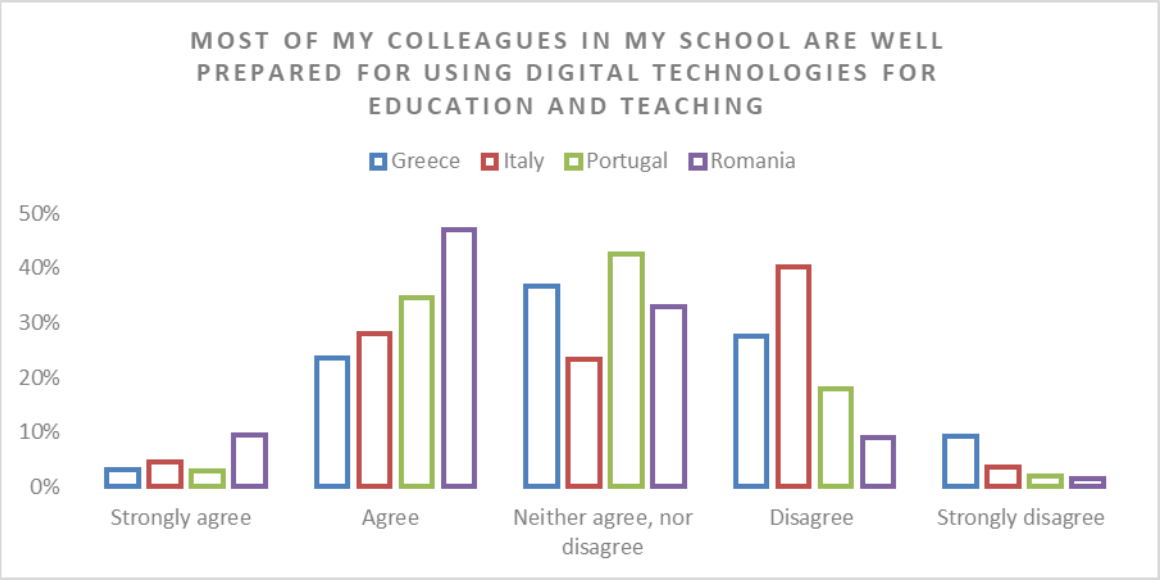

Figure 22 - Teachers' colleagues' preparedness to use digital technologies for education and teaching

Teacher competence frameworks and learning in the field of digital education in Italy

For Italy, when participants in our research were asked to select **which teacher area of competence they consider being the most important in the field of digital education**, the most popular choice was number 5, **Empowering Learners**, defined as "the use of digital technologies to enhance inclusion, personalisation and learners' active engagement", with a percentage of 51.4%. Area number 3, **Teaching and Learning**, defined as "managing and orchestrating the use of digital technologies in teaching and learning", followed with a percentage of 25.2%. The other two skill areas gathered smaller percentages: **Digital resources**, namely "sourcing, creating and sharing digital resources" was chosen by 19.6% of respondents and **Assessment**, "using digital technologies and strategies to enhance assessment" was selected by only 3.9% of respondents.

If we focus on the most chosen area, number 5, we find that the specific competence considered of greatest interest is **differentiation and personalisation**, defined as "using digital technologies to address learners' diverse learning needs, by allowing learners to advance at different levels and speeds, and to follow individual learning pathways and objectives". It was indeed chosen as the most important skill (22.3%), followed by **actively engaging learners**, defined as "using digital technologies to foster learners' active and creative engagement with a subject matter, such as civic education" (17%). **Accessibility and inclusion**, defined as ensuring accessibility to learning resources and activities, for all learners, including those from disadvantaged backgrounds and vulnerable students, also gathered a percentage of 12.6%.

The most chosen one form the area number 3 was **teaching**, defined as "planning for and implementing digital devices and resources in the teaching process, so as to enhance the effectiveness of teaching interventions, experimenting with and developing new formats and pedagogical methods for instruction" (14%), while the other skills followed with smaller percentages.

But how prepared do teachers in Italy actually feel about using digital technologies for education and teaching? Approximately half of the participants in our survey (51%) agree with the statement "**I feel well prepared for using digital technologies for education and teaching**", 21.5% strongly agree with this statement, 16.8% neither agree nor disagree, while 10.3% disagree or strongly disagree with it.

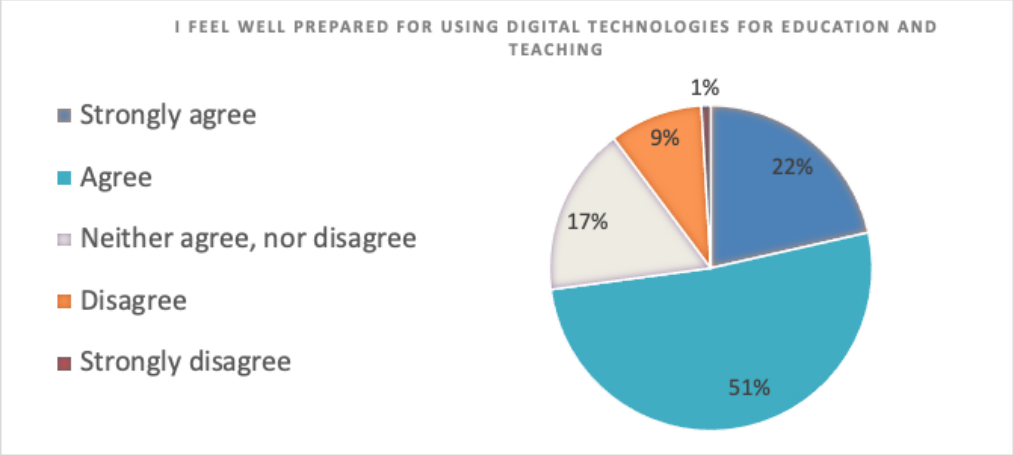

Figure 23 - Italy – Percentage of respondents who agree with the sentence "I feel well prepared for using digital technologies for education and teaching"

When asked about their colleagues, agreement percentages get lower and disagreement percentages get higher. Only 28% agree with the statement "**Most of my colleagues in my school are well prepared** for using digital technologies for education

and teaching", 4.7% strongly agree, 23.4% neither agree nor disagree, while **40.2% disagree** and 3.7% strongly disagree.

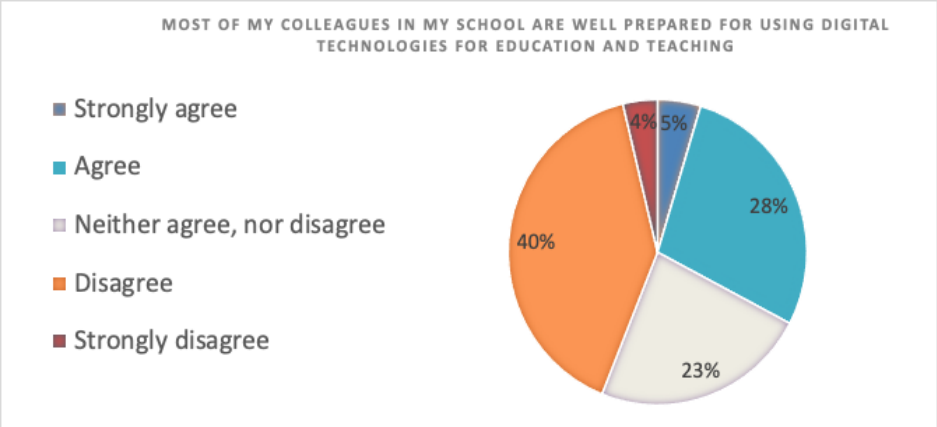

Figure 24 - Italy – Perception regarding the level of preparation of colleagues.

When considering the level of readiness in using digital technologies, there appears to be a discrepancy in the teachers' perception regarding their own preparation and that of other colleagues. This could be partly due to the **lack of an uniform self-assessment tool used by Italian teachers.**

What are the skills which they feel are most lacking? The responses confirm the percentages described above, justifying that the skills of greatest interest are also those where teachers feel are most lacking and where an improvement is needed.

Also according to the stakeholders interviewed, the two areas selected by the respondents to the questionnaire (numbers 3 and 5) are not only those of greatest interest, but also those where there are actually major gaps in school.

> *Considering area number 5, in particular, many teachers are aware of the fact that **using digital technologies can facilitate the learning of vulnerable students**, but what is missing is the understanding of **which technologies to use and how to integrate them** in a more personalized and individualized learning path* - Laura Fedeli - Associated Professor University of Macerata.

Furthermore, according to them, there is another skill that deserves a lot of attention: **Collaborative learning** (area number 3), namely "to use digital technologies to foster and enhance learner collaboration. To enable learners to use digital technologies as part of collaborative assignments". This skill is specular compared with another one from area number 1, **professional collaboration**, defined as the "use (of) digital

technologies to engage in collaboration with other educators, sharing and exchanging knowledge and experience, and collaboratively innovating pedagogic practices". From the point of view of the experts interviewed, in fact, one of the priorities should be enhancing the professional collaboration between teachers, providing them with tools, approaches and methodologies capable to enable them to talk to each other, sharing experiences in order to build robust training programs and contents based on each others' experience. If this competence were widely developed in teachers and if they were the first to be aware of the potential of digital tools to foster collaboration, it would be natural to use these tools and approaches also in the classroom, transferring them to students and thus fostering collaborative learning.

Collaborative learning and teamwork is currently promoted by many methodologies and many teachers are engaging with it, especially in skills-based teaching.

Collaborative learning does not mean that working together works. There are conflicts and more or less effective ways and methods and tools are needed to improve collaborative learning. Furthermore, it is not yet clear how skills are assessed: how do you evaluate the work of a group if we then have to rate each individual pupil? - Andrea Benassi - Researcher INDIRE

The stakeholders interviewed also highlighted critical aspects of assessments in school. Massimiliano Ventimiglia, Onde Alte CEO, for example, points to how the Italian education system does not invest in a critical review of the students' competence assessment system - even before Covid 19. With the pandemic the fragility of the outdated assessment system worsened when teachers tried to adopt old evaluation methods in the digital environment. Ventimiglia suggests, on the other hand, that the post pandemic period could be a good moment to rethink the assessment system.

The EU Teachers competences framework plays a very useful role in identifying the areas of focus in order to enhance the set of digital competences for teaching practice and professional learning. According to the information gathered in our research, Area 3 (Teaching and learning) and 5 (Empowering learners) deserve special attention in designing training courses for teachers. Even if Area 4 (Assessment) is considered critical only by a few teachers, it should be observed at different levels of the school system, in order to update the set of tools regarding the Students' Competences Assessment especially considering digital methodologies.

Teacher competence frameworks and learning in the field of digital education in Greece

For Greece, when the participants in our research were asked to select **which teacher competencies they consider being the most important in the field of digital education, the most popular choice was the use of digital technologies to enhance inclusion, personalisation and learners' active engagement**, with a percentage of 47.4%. Managing and orchestrating the use of digital technologies in teaching and learning followed with a percentage of 41.2%, while the other two skill areas gathered smaller percentages. Sourcing, creating, and sharing digital resources was chosen by 7.2% of respondents and using digital technologies and strategies to enhance assessment by 4.1% of respondents.

When asked about specific skills in the skills areas that they had selected, **differentiation and personalisation**, defined as using digital technologies to address learners' diverse learning needs, by allowing learners to advance at different levels and speeds, and to follow individual learning pathways and objectives, was chosen as the most important skill (20.6%), together with **accessibility and inclusion**, defined as ensuring accessibility to learning resources and activities, for all learners, including those from disadvantaged backgrounds and vulnerable students (20.6%). **Teaching**, defined as planning for and implementing digital devices and resources in the teaching process, so as to enhance the effectiveness of teaching interventions and experimenting with and develop new formats and pedagogical methods for instruction, followed with 14.4%, **guidance**, defined as the use of digital technologies and services to enhance the interaction with learners, individually and collectively, within and outside the learning session and the use digital technologies to offer timely and targeted guidance and assistance, with 10.3%, **collaborative learning**, defined as using digital technologies to foster and enhance learner collaboration and enabling learners to use digital technologies as part of collaborative assignments, with 9.3% and **self-regulated learning**, defined as digital technologies to support self-regulated learning processes, with 7.2%, while more skills followed with smaller percentages.

The majority of the participants in the BET survey in Greece (76%) **had participated in a training on the use of digital technologies in teaching and education during the last year**, compared to 47.7% of the participants in Italy, 54.5% in Portugal and 55.1% in Romania. Furthermore 35% of the participants in Greece had participated in a training on digital technologies. Only 14% indicated that they did not attend any training on these topics.

These trainings were provided by an Educational Institution - Ministry of Education or related authorities, agencies (70%), or by a private training organisation (22%), by an NGO (5%) or by other stakeholders (5%). Once again, some country differences were observed with educational institutions (Ministry of Education or related authorities, agencies) undertaking a bigger percentage in the case of Greece comparatively to the other countries (70% for Greece, 33% for Italy, 41.6% for Portugal, 36.1% for Romania).

Teacher undergraduate studies - The Greek reality

The Communication from the European Commission on school development and excellent teaching highlighted that quality initial teacher education should combine subject knowledge, pedagogical theory, and sufficient classroom practice[44].

According to the research of Tzifopoulos M. (2019)[45], that was based on the study of the curricula of the nine pedagogical departments of primary education, future teachers are offered a small number of compulsory courses (12) on ICT and a disproportionately large number of elective courses (72), which are more specialized, being provided with a basic grid, mainly, of knowledge and secondarily with digital skills. The recommendation would thus be to offer more laboratory courses not of Informatics, but on the pedagogical use of ICT/digital tools in education, where with the vehicle of technology the future teachers should strengthen their (professional) identity and enrich it with elements of didactic design with the help of digital tools.

In the case of future secondary education teachers, the situation is more complicated. According to the Education and Training Monitor report of the European Commission

[44] European Commission (2017). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. School development and excellent teaching for a great start in life*. SWD(2017) 165 final. COM(2017) 248 final.
[45] Tzifopoulos, M. (2019). *Teacher Education for the Digital Oriented School: Primary School Education Curricula in Greece.* Proceedings of the 11th Panhellenic Conference of the Hellenic Educational Society (ΠΕΕ). November 23-25. pp. 460-471

(2019)[46] especially in secondary education teachers in Greece are highly educated but lack opportunities to develop their pedagogical competences. Different research conducted confirm that pedagogical training is a small percentage of the total curricula, is optional and is often not combined with application in practice (Georgiadis M. et al, 2013[47]).

It is thus evident that a National Teacher Qualifications Framework for Greece will need to be developed, in order not only to act a long-term benchmark/ guideline for initial teacher training but also for further teacher trainings.

Teacher continuous education - The Greek reality

In Greece, the need for primary and secondary school teachers to develop basic ICT knowledge and skills was originally approached during 2000-2004, through the initiative known as **A-Level ICT Teacher** Training. This was later followed by the in-service Training of Teachers in the utilisation and application of Digital Technologies in the teaching practice, known as **B-Level ICT Teacher** Training and addressed basic specialty teachers: Philology-Language, Mathematics, Physical Sciences, Informatics, Primary Education and Kindergarten Teachers. The project "In-service Training of Teachers in the utilisation and application of Digital Technologies in the teaching practice" (B-Level ICT Teacher Training), implemented by the Computer Technology Institute and Press (CTI) – "Diophantus" (in particular by the Directorate of Training and Certification of CTI) acting as the beneficiary, in collaboration with the Institute of Educational Policy (IEP), constitutes the continuation, and further development of the integrated training for the utilisation and application of Digital Technologies in the teaching practice (B-Level ICT Teacher Training) which is being updated, upgraded, enriched in content and extended to all teacher disciplines.

B1-Level ICT Teacher training constitutes an introductory 36-hour training course on issues of educational exploitation of ICT and addresses primary and secondary school teachers of all disciplines and specialties. B1-Level ICT teacher training programs take place outside school hours, in Teacher Training Support Centres (TTSCs) all around

[46] European Commission (2019). *Education and Training Monitor 2019 Greece*, Vol. 1, Luxembourg: Publication Office of the European Union.

[47] Georgiadis, M., Oikonomou, A. (2013), *The relationship of theory and practice in curricula for teacher education*. Scientific Educational Journal εκπ@ιδευτικός κύκλος, volume 1 issue 2 ISSN: 2241-4576

Greece, in groups of teachers of "related" specialties - disciplines ("clusters" of teachers' disciplines).

The **"Advanced course for the utilization and application of ICT in the teaching practice" (B2-Level ICT teacher training)** is the continuation of the "Introductory training for the utilization of ICT in school" (B1-Level ICT teacher training) and guides teachers through deepening their knowledge and skills at the level of integrated teacher training for the pedagogical use of ICT in the teaching practice (B-Level ICT in-service training).The program consists of 42 teaching hours, activities and tasks as well as of 18 hours of additional support meetings for "in-class application of ICT" (i.e. 60 hours in total).[48]

Teacher preparedness for digital education

But how prepared do teachers in Greece actually feel for using digital technologies for education and teaching? **Almost half of the participants in our survey** (48%) **agreed that they feel well prepared for using digital technologies for education and teaching**, and 26.5% even strongly agreed to this statement. 20.4% neither agreed nor disagreed, 4.1% disagreed and 1% strongly disagreed.

Interestingly though, when confronted with the question "Most of my **colleagues** in my school are well prepared for using digital technologies for education and teaching", the agreement percentages drop. In this case, 23.5% agreed with the statement and only 3.1% strongly agreed, while 36.7% neither agreed nor disagreed. In this case **more than 1 out of 4** (27.6%) **disagreed** and almost 1 out of 10 (9.2%) strongly disagreed.

[48] https://e-pimorfosi.cti.gr/en/the-project/about-b-level-ict-teacher-training

Teacher competence frameworks and learning in the field of digital education in Romania

When the participants in our research were asked to select **which teacher competencies they consider being the most important in the field of digital education, the most popular choice was the use of digital technologies to enhance inclusion, personalisation and learners' active engagement**, with a percentage of 42.6%. Managing and orchestrating the use of digital technologies in teaching and learning followed with a percentage of 32%, while the other two skill areas gathered smaller percentages. Sourcing, creating and sharing digital resources was chosen by 13.2% of respondents and using digital technologies and strategies to enhance assessment only by 12.2% of respondents. More specifically, **differentiation and personalisation**, defined as using digital technologies to address learners' diverse learning needs, by allowing learners to advance at different levels and speeds, and to follow individual learning pathways and objectives, was chosen as the most important skill (21%), followed by **teaching**, defined as planning for and implementing digital devices and resources in the teaching process, so as to enhance the effectiveness of teaching interventions, experimenting with and developing new formats and pedagogical methods for instruction (15.9%), and **accessibility and inclusion**, defined as ensuring accessibility to learning resources and activities, for all learners, including those from disadvantaged backgrounds and vulnerable students (14.4%). **Collaborative learning**, defined as the use digital technologies to foster and enhance learner collaboration and enabling learners to use digital technologies as part of collaborative assignments also gathered a percentage of 8.2%, **guidance,** defined as the use digital technologies and services to enhance the interaction with learners, individually and collectively, within and outside the learning session and the use digital technologies to offer timely and targeted guidance and assistance, a percentage of 7.7% and **actively engaging learners**, defined as using digital technologies to foster learners' active and creative engagement with a subject matter, such as civic education, a percentage of 7.2%, while more skills followed with smaller percentages.

From the interviews, when asked "Keeping in mind the DigiCompEdu framework, do you believe educators in your country are facing some **gaps with regards to their digital competencies/skills?**", the answers were:

We made an identification of the needs through the Selfie questionnaire proposed by DigiCompEdu for students 11 - 14 years old and teachers of the school, plus the principal. We then received a report showing how digital skills are at the level of student, teacher and principal. Where the differences were big, there we gave more importance. The perspectives were different but we all acknowledged that we learned on a whim, more alone or collaboratively and what was common was the general opinion that we do not respect copyright when we use digital skills.

Also, there are still teachers at national level and especially in rural areas who do not know how to use the computer in general. In order to get to use a platform or other tools, they must first learn to use a computer. If there was no pandemic, it would not have been a personal initiative. There are also teachers who use the computer at a basic level but without knowing how to develop online lessons. So they need courses, conferences, exchange of experience etc. and motivation to learn. It is much harder to learn on our own.

The digital expert stated that: We used the DigiCompEdu framework in many of our training with the teachers. There are some areas where we need a lot of improvement. For example, from my YouTube channel I concluded that knowing about online assessment is a big need, because 70.000 viewers watched the video related to assessment: how to create an assessment strategy; how to give feedback in real time; how to use different types of assessment.

Teachers asked for lessons to be already created for them because they do not have the time, the skills to create and upload digital lessons. It is very complicated to create videos for example because it requires special competences. To open a Zoom session and deliver a session is ok, but when they need to create and deliver using digital tools they need a lot of coaching and training. They are much better at communicating online than to create content. They do not have a good understanding of what is happening online for students' learning experiences.

Teacher trainings on digital education

Draft Framework Curricula for high-school – the academic, aptitude-based, and technological paths – have been developed and published for public consultation. In the period 2019-2020, 453 subject curricula have been developed for special education at preschool, primary and lower secondary levels, in accordance with the related Framework Curricula approved by the Order of the Education Minister no. 3622/2018. Several vocational training standards and a curriculum have been developed and will be approved by an Order of Minister (One vocational qualification has been approved for the profession of "string instrument maker" and other vocational qualifications are being developed for the professions "auto electrician", "subassembly mounting operator" (Level 3 according to the National Qualification Framework - NQF) and "advertising designer" (Level 5 - NQF).

In the project CRED - Relevant Curriculum, Education Open to All, several documents have been developed: the educational policy document Guidelines for designing, updating and evaluating the National Curriculum; an Order of Minister has approved the Methodology for the development of the school-based curriculum and the Methodology for the organisation of the programme "A Second Chance" – primary education; also the Methodology for the organisation of the programme "A Second Chance" – secondary education has been drafted and the structure of the working documents has been designed for 18 methodological guides related to the implementation of the National Curriculum in primary and lower secondary education.

Furthermore, open educational resources (OER) have been developed for the collection A Glossary of Educational Concepts.

More than half of the respondents in our survey (55.1%) had attended a training on the use of digital technologies in teaching and education during the last year, and 26.8% a training on digital technologies. 28.3% did not attend any training on these topics during the last year. This training was provided in 36.1% of the cases by an educational institution (Ministry of education or related authorities, agencies), in 22.4% of the cases by an NGO and in 18.5% of the cases by a private training institution.

Teacher preparedness for digital education

But how prepared do teachers in Romania actually feel for using digital technologies for education and teaching? Approximately half of the participants in our survey (52%) agree with the statement "**I feel well prepared for using digital technologies for education and teaching**", 24.7% strongly agrees with this statement, 19.2% neither

agrees nor disagrees, while 3.5% disagrees with it. When asked about their colleagues., agreement percentages get lower and disagreement percentages get higher. Thus, in this case 47% agree with the statement "**Most of my colleagues in my school are well prepared** for using digital technologies for education and teaching", 9.6% strongly agrees, 32.8% neither agrees nor disagrees, while **9.1% disagrees** and 1.5% strongly disagrees.

From the interviews, when asked "Do you know if the institutions in your country are doing / will do something to **improve teachers' digital skills?** Are they working on new training to support teachers in the use of digital tools?", the answers were:

In Buzau County, CCD offered introductory courses in the field of online activities. Nothing specific. Nothing very applied. They offered them very late. But we enjoyed the Save the Children courses and also the School of Values in Education ones. There were free courses, organized according to the free time of the teachers. I opted for GSuite because it's free.

There are also public and private organizations that try to help teachers. The most complex project is that of the Ministry of Education - the CRED project. It runs for several years and wants to train tens of thousands of teachers in the use of educational platforms, on how to create and how to use open resources. It started before covid and it continues. They have a platform and online sessions.

It was also the Digital Nation project that implemented free courses for teachers, then for a fee. Teach for Romania also has courses for teachers.

A lot of NGOs are active in digital education but we do not have a ranking for which one is better than the other. Many do a walkthrough of the digital tools but they do not do the courses for content development. That is why many teachers still need training for this. The active engagement is a challenge for all those that create online learning classes.

There are also some schools that asked for dedicated training for their teachers but in 2021 they became less active than in 2020, when they were forced by COVID. If the leadership of the schools will have the same attitude to train the teachers, they will be engaged.

Teacher competence frameworks and learning in the field of digital education in Portugal

For Portugal, when the participants in our research were asked to select **which teacher competencies they consider being the most important in the field of digital education, the most popular choice was the use of digital technologies to enhance inclusion, personalisation and learners' active engagement**, with a percentage of 52.5%. Managing and orchestrating the use of digital technologies in teaching and learning followed with a percentage of 20.8%, while the other two skill areas gathered smaller percentages. Sourcing, creating and sharing digital resources was chosen by 13.9% of respondents and using digital technologies and strategies to enhance assessment by 12.9% of respondents. More specifically, **differentiation and personalisation**, defined as using digital technologies to address learners' diverse learning needs, by allowing learners to advance at different levels and speeds, and to follow individual learning pathways and objectives, was chosen as the most important skill (24.8%), followed by **accessibility and inclusion**, defined as ensuring accessibility to learning resources and activities, for all learners, including those from disadvantaged backgrounds and vulnerable students (19.8%). A less popular skill was actively engaging learners, defined as using digital technologies to foster learners' active and creative engagement with a subject matter, such as civic education (7.9%), while more skills followed with smaller percentages.

According to the opinion of the digital expert, in the context of the interview, skills should be reinforced through education. The focus wouldn't be so much on the tool itself, but more on the need of inclusion, on how to use the full potential of the tool to foster inclusion (for example, learn how to adapt a Word text for students with blindness).

According to Fonseca (2020)[49], it is important to invest in the training and capacity building of trainers in and for the pedagogical use of ICT. In the last 25 years there have been several trainings to promote ICT in Portuguese schools. ICT training in teacher's continuous education has been provided within the framework of projects, programs and initiatives, such as the Minerva Project (1985-94)[50], the Nónio 21st Century Program (1996-2002)[51], and the Technological Plan for Education (2007-2011)[52].

The DGE made available, in April 2020, "Training for Digital and Networked Teaching", where themes such as Online Education and Communication and Virtual Pedagogical Models, Online Digital Platforms and Technologies and e-Learning and Digital Assessment Activities were developed. According to Duarte, Torres & Brito (2007)[53], teacher training plays a decisive role in the professional development and valuing of teachers.

Concerning the lack of personal digital competences, according to Eurydice report "Digital Educational at School in Europe" (2019)[54], it's stated that in Portugal digital competence is not included in teacher competence framework/autonomy of Higher Education Institutions (considering the inclusion of teacher-specific digital competences in top-level regulations/recommendations on Initial Teacher Education or teacher competence frameworks, primary and general secondary education [ISCED

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[49] Fonseca, G. R. (2020). *As TIC na formação inicial de professores – Práticas de formação de formadores*. Da Investigação às Práticas: Estudos De Natureza Educacional, 10(2), 4–25. https://doi.org/10.25757/invep.v10i2.199

[50] Ponte, J. P. (1994). MINERVA Project Introducing NTI in Education Portugal DEPGEF. https://www.researchgate.net/publication/285725120_MINERVA_Project_Introducing_NTI_in_Education

[51] Romero, Z., & Silva, B. D. (2001). *Construção de um instrumento de avaliação da integração das TIC na escola.* https://ruc.udc.es/dspace/handle/2183/6877

[52] Duarte, S. M. P. G. (2016*). A liderança e a implementação do Plano Tecnológico de Educação nas escolas portuguesas*. https://repositorioaberto.uab.pt/handle/10400.2/5447

[53] Duarte, J., Torres, J., & Brito, C. (2007). *As TIC na formação de professores: do pacote Office ao pacote Moodle*. In Actas da V Conferência Internacional de Tecnologias de Informação e Comunicação na Educação–Challenges 2007 (pp. 610-618). Centro de Competência da Universidade do Minho. https://comum.rcaap.pt/handle/10400.26/5543

[54] European Commission. (2019). *Eurydice Brief. Digital Education at School in Europe*. https://op.europa.eu/en/publication-detail/-/publication/8bc1dd11-e8ea-11e9-9c4e-01aa75ed71a1/language-en

1-3], 2018/19). Nevertheless, there are master's and post-graduate programs that offer a critical perspective on the use of technologies in education. ICT training is included as an optional subject [e.g. University of Aveiro - Degree in Basic Education[55]] in some cases.

"We hope that new teachers have these [digital] skills – I have some doubts, because I also do internship guidance for the Masters in Teaching of History and I also don't know to what extent these new teachers are so well prepared. (...). I've been doing this work for a few years and I've noticed some evolution, but it's because we're all a little more knowledgeable and sensitized to the digital, also with the pandemic, which accelerated all this." (Isabel Catarino)

One of the measures implemented was the INCoDe 2030, an integrated public policy initiative dedicated to strengthening digital skill, that gathers different indicators and targets used to monitor the evolution of skills and services in Portugal (Council of Ministers Resolution, 2021)[56].

According to the interviews, there are training that teachers are required to do, many of them are in the ICT area and new dynamics. There is also the digital transition plan that involves the digital transition of the schools, which are based on benchmarks such as the INCoDe 2030 dynamics framework, that is a reference based in the DigiCompEdu.

When confronted with the question "What characteristics should a training course have in order to meet the needs of teachers?", one of the interviewed considers that it is relevant to have a welcoming module.

"When training is given online, I think there is a need for a module to explain how it is going to be processed online and to be adapted to the different levels of digital literacy that each teacher has." (Luísa Paixão)

Regarding the issues of learners' active engagement, it is necessary to understand that technology, being highly configurable, makes it possible to create techniques to make the student feel that the education has been personalized for him or her.

When confronted with the question "Have you attended digital training courses in the last year?" more than half of the answers (54,5%) were positive with regards to training

[55] Universidade de Aveiro. Licenciatura em Educação Básica. https://www.ua.pt/pt/c/94/p

[56] Resolução do Conselho de Ministros Nº. 59/2021 de 14 de maio. Diário da República nº 94 - I Série (pág.23). Lisboa: Presidência do Conselho de Ministros. https://dre.pt/home/-/dre/163442517/details/maximized

on the use of digital technologies in teaching and education and 22.% had followed a training on digital technologies. Only 32.7% indicated that they did not attend any training on these topics. These trainings were provided by an Educational Institution - Ministry of Education or related authorities, agencies (41.6%), or by a private training organisation (15.8%), by an NGO (2%) or by other stakeholders (8.9%).

"I think that in these courses, training must be very practical, it must be designed according to the needs of each teacher, there has to be a prior assessment of knowledge, the limitations of each one and what is needed and what is intended for the teachers to be able to do." (Alexandra Rodrigues)

But how prepared do teachers in Portugal actually feel for using digital technologies for education and teaching? When dealing with the question "How much do you agree or disagree with the following statements? I feel well prepared for using digital technologies for education and teaching", half of the teachers agreed, but when confronted with the question "Most of my colleagues in my school are well prepared for using digital technologies for education and teaching.", only 34,7% agreed.

Chapter 3

DIGITAL EDUCATION APPROACHES AND PRACTICES

Overview

Use of digital tools inside the classroom

The use of digital tools seemed to be widespread among the participants in our survey, with **more than half of them** (63%) indicating that they **use digital tools inside the classroom** (such as online platforms, multimedia resources, shared repositories) **most of the time or all the time**. This percentage was even higher in the case of Romania (71.2% compared to Greece-Italy-Portugal average of 61.3%).

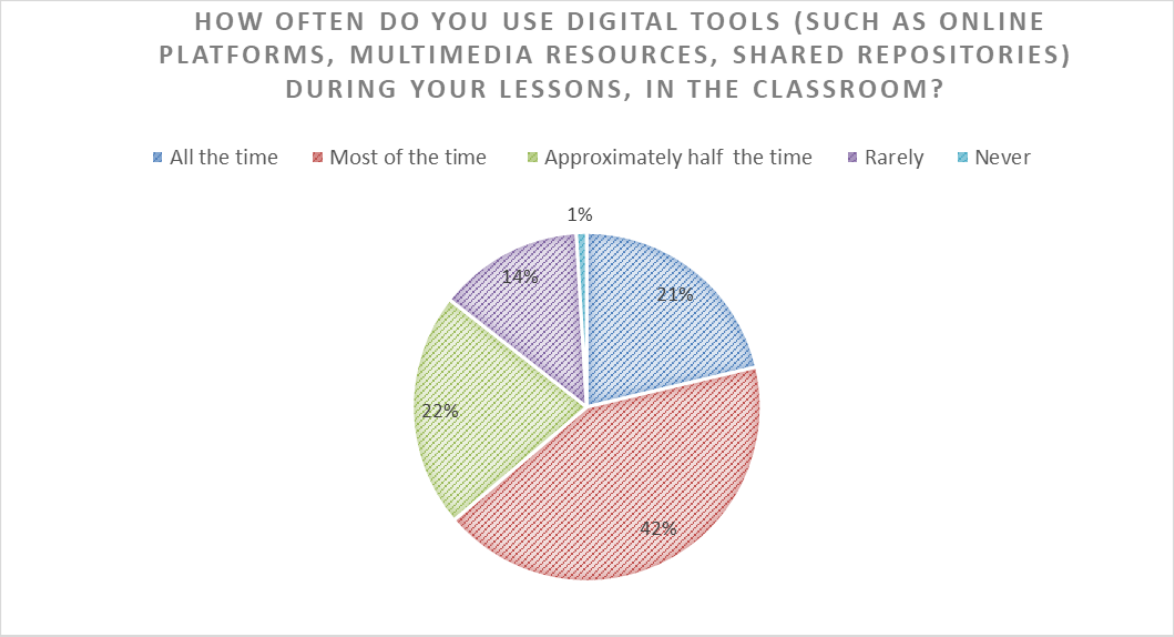

Figure 25 - Percentages of digital tools utilization in the classroom

Use of digital tools outside the classroom

Comparatively, for asking students to **use digital tools for homework**, outside the classroom, these percentages were lower, with **more almost one third of them** (35.4%) indicating that they do it **most of the time or all the time**.

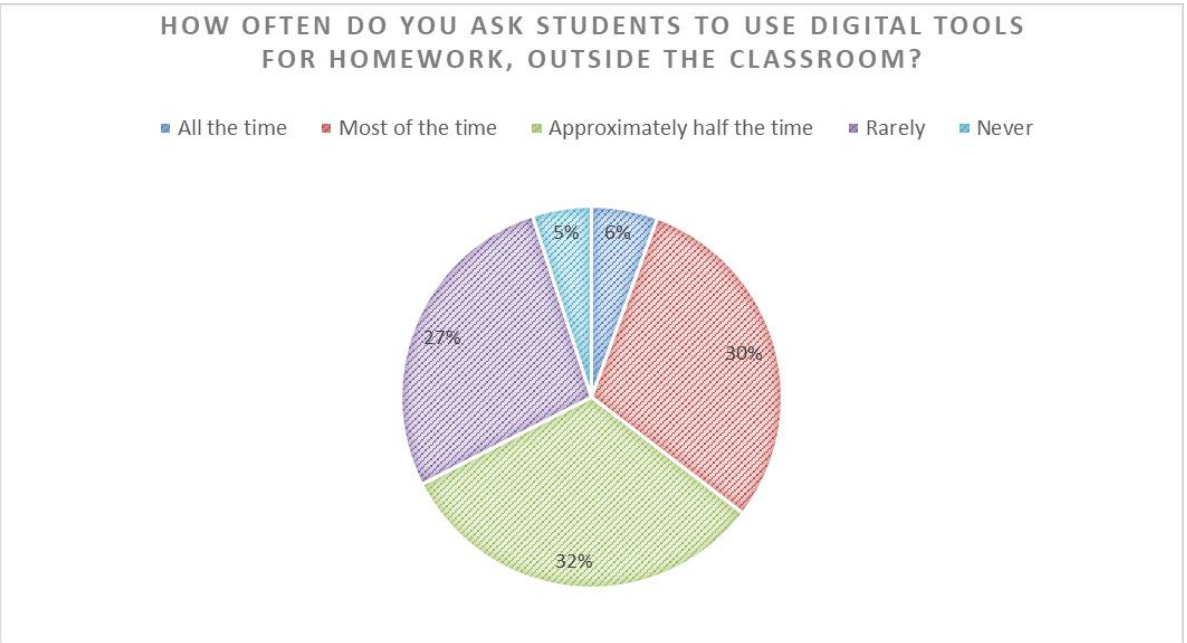

Figure 26 - Percentages of digital tools utilization outside the classroom

Most frequently used digital tools by teachers

When teachers from the different survey countries were specifically asked to indicate which digital tools/platforms/ channels they use the most an impressively long list was compiled.

In this list we can find platforms that are unique to each survey country, such as:

- the electronic register, Mondadori Education and Rai Scuola for Italy,
- the various platforms provided by the Greek state (like dschool.edu.gr, photodentro, etc) for Greece
- Escola virtual, #EstudoEmCasa, Inovar and Aula Digital for Portugal
- Edu.ro, Manuale Digitale, Adservio, Livresq, platforms for religion classes (such as e-religie.ro, Red-religie.ro etc) for Romania.

Other tools that were popular among the teachers were Google Suite for Italy and Romania, Google Classroom for Portugal and Cisco WebEx for Greece. Of course, the participants in our research also mention the use of other communication platforms such as Zoom, Microsoft Teams and Skype. YouTube was also popular in all project countries. E-Twinning and the platform Twinspace were mentioned in Romania, Greece and Italy. Moodle was also mentioned in Portugal and in Greece.

Finally, in this list there are also digital books, tools for creating materials (like Canva and Learning Apps in all survey countries and Microsoft Office in Portugal and in

Greece), tools for creating a digital board (like Padlet in all countries and Whiteboard in Greece). And we also come across many online tools for creating quizzes and polls (like for example Kahoot in all survey countries and Mentimeter in Portugal and Romania).

Most frequently used digital tools by students

Likewise, when teachers from the different were asked what are the digital tools that students use most, they mention most of the above tools that they also use.

An exception is the reference to the smartphones as a communication tool by teachers in Italy and the use of social media (Instagram, Tic Toc, Viber) that was mentioned by the teachers in Greece.

Digital education approaches and practices in Italy

For Italy the **use of digital tools was surprisingly widespread** among the participants in our survey: 22.9% used digital tools (such as online platforms, multimedia resources, shared repositories) all the time, during lessons in the classroom and 37.6% declared that they use them most of the time. Only 19.3% declared that they rarely use digital tools whilst 1.8% never use them.

The most used digital tools were the electronic register, Electronic Billboard, Google suite whilst the most used digital channels included Youtube, E- Twinning, Mondadori Education, Rai Scuola, online games and digital books.

While it is true that, according to the responses in the survey, digital tools are widely used in the classroom, there still seems to be room to take an **extra step towards a more "collaborative approach"**.

In fact, digital tools by their very nature could favor the spread of a more collaborative approach to teaching, regarding **relations between students and teachers**.

According to the stakeholders interviewed, technology should be seen as a tool that increases **collaboration** in the classroom and offers opportunities for **co-design**.

Fedeli reported innovative experiences developed in the field of co-design (DEPIT - Erasmus +), or rather a shared digital tool where students could access visualizing their teachers' didactic planning and provide feedback. Students' active participation in the lesson planning engages more students in the process and also could be a valid tool for the personalization of the lessons aimed at a more efficient inclusion of vulnerable students.

On the other hand, the use of digital technologies **outside of the classroom, seems to be not so widespread**, in fact only 30.3% of the teachers declared that they asked

students to use digital tools for homework, approximately half the time, whilst 33% said that they rarely asked them.

Also according to the experts interviewed, **homework could also be an opportunity to work in a team and collaborate**. The group-class can continue digitally, outside school hours, **regardless of distances and physical spaces available**:

> *" ...then there is a time at home, before (COVID) it was considered an individual time, nowadays with the widespread use of school digital platforms it is a collective time and it could be a reference for the future. With these digital tools, the class could meet and "do" things together . The collective time is not only the time at school anymore but it could also be the time at home. " .* - Andrea Benassi - Researcher INDIRE

Likewise, teachers said that the most used digital tools by students were smartphones to connect with teachers and other students; the most used platform by students was Google Suite and the most used channel was YouTube.

According to the interviews, however, some teachers' full awareness of the potential and relevance of digital tools has not yet been reached (see also Chapter 5):

> *Even now, for instance, I heard teachers preventing students from using smartphones at school. I don't agree, because smartphones could be a working tool, used in class useful for many different kind of activities"* - Rita Giancotti - School Head

Thanks to the information gathered in our research, we observed a large diversity in digital practices adopted even if there are common patterns. These practices nevertheless lack synergic integration and a collaborative perspective.

Digital education approaches and practices in Greece

For Greece he use of digital tools seemed to be widespread among the participants in our survey, with **more than half of them** (59%) indicating that they **use digital tools inside the classroom** (such as online platforms, multimedia resources, shared repositories) **most of the time or all the time**.

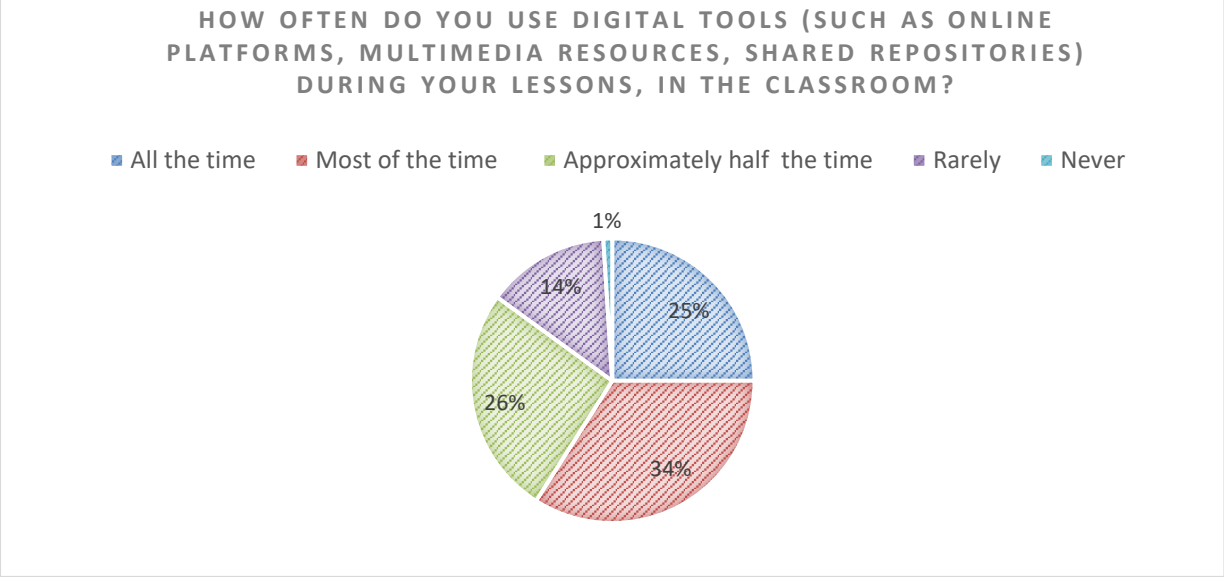

Figure 27 - Greece- Percentages of digital tools utilization in the classroom

Comparatively, for asking students to **use digital tools for homework**, outside the classroom, these percentages were lower, with **more than one third of them** (38%) indicating that they do it **most of the time** or all the time.

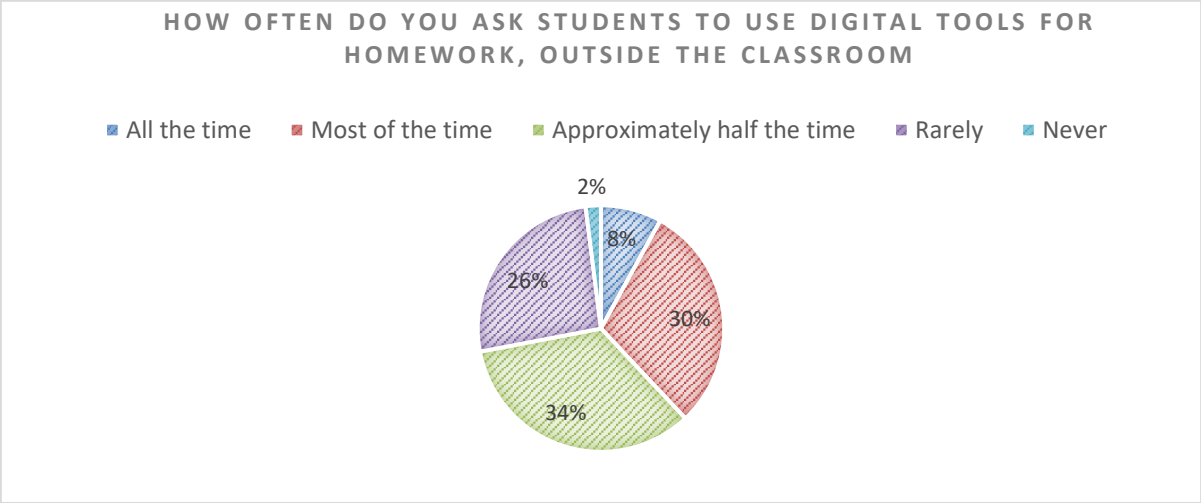

Figure 28 - Greece - Percentages of digital tools utilization outside the classroom

Most frequently used digital tools by teachers

In Greece a considerable amount of digital educational content has been developed in the recent years[57]. Some of the platforms and tools provided by the Greek state to the educational community are:

- **Digital school** (https://dschool.edu.gr/) The main page for the digital educational content of primary and secondary education.
- **Photodentro Aggregator** (http://photodentro.edu.gr/aggregator/). The national aggregator of educational content for primary and secondary Education. It is the central e-service of the Ministry of Education for the unified search and distribution of digital educational content to schools. It is open to everyone, students, teachers, parents and anyone interested. The aggregator also provides a link to Photodentro Politismos and the 6 Photodentro digital repositories. **Photodentro politismos** (http://photodentro.edu.gr/cultural/) is a thematic aggregator of cultural educational resources for primary and secondary education, that includes over 7.600 learning objects. The 6 **Photodentro digital repositories**, that include more than 11.500 educational resources, are:
  - **Photodentro LOR** (http://photodentro.edu.gr/lor/) The panhellenic repository of learning objects
  - **Photodentro video** (http://photodentro.edu.gr/video) The panhellenic repository of educational videos

[57] European Commission (2020). *Education and Training Monitor 2020 Country Analysis*, Luxembourg: Publication Office of the European Union.

- **Photodentro edusoft** (http://photodentro.edu.gr/edusoft) The panhellenic repository of educational software
- **Photodentro UGC** (http://photodentro.edu.gr/ugc) The panhellenic repository of user generated educational material
- **Photodentro OEP** - http://photodentro.edu.gr/oep The panhellenic repository of open educational practices
- **Photodentro i-create** - http://photodentro.edu.gr/i-create The panhellenic repository of student creations of Educational Radio and Television

Furthermore, there are also Photodentro Mikrotopoi, two sites with selected content from Photodentro based on the target audience and the topic:

- **Mikrotopos Photodentro Primary Education** (https://micro.photodentro.edu.gr/primary/) and
- **Mikrotopos Photodentro English Language** (https://micro.photodentro.edu.gr/english/)

- **E-books** (http://ebooks.edu.gr) It is the official digital space of the Ministry of Education and Religious Affairs for the distribution of the digital forms of all textbooks.
- **Panhellenic School Network** (https://www.sch.gr/) It is the national network and internet service provider of the Ministry of Education and Religions which connects 16,079 school units. It also provides e-learning, communication and collaboration services.
- **E-me Platform** (https://e-me.edu.gr) The e-me Digital Educational Platform for students and teachers is an online social platform that provides a safe "space" for cooperation and communication of students, teachers and schools, as well as digital "tools" to support teaching and learning.
- **AESOP Platform** (http://aesop.iep.edu.gr/) A complete tool for designing digital teaching scenarios.
- **Prosvasimo** (http://prosvasimo.iep.edu.gr) A platform with accessible educational materials for students with disabilities.
- Greek Language Center - **Portal for the Greek language** (https://www.greek-language.gr/greekLang/index.html) A portal by the to support language study and teaching.[58]

When specifically asked to indicate which digital tools/platforms/ channels the use the most, for Greece the most commonly stated were the ones proposed/ provided/ used

[58] Circular of the Ministry of Education (12-11-2020) Useful tools and instructions for asynchronous distance education in school year 2020-2021.

by the official educational system: dschool.edu.gr, photodentro, e-class, e-me, sch.gr, ebooks.edu.gr, Cisco Webex, Prosvasimo, Moodle of the Institute of Educational Policy, email, e-mathisi.mysch.gr. Other platforms teachers mentioned using were YouTube, Microsoft Teams, the British Council platform, Zoom, Skype, TwinSpace Platform, Portal for the Greek language, http://users.sch.gr/ipap/Ellinikos%20Politismos/eisodos.htm.

Other tools teachers in Greece listed were Padlet, Whiteboard, PowerPoint, Microsoft Office, Google Forms/ Docs, Canva, Scratch, Blogs, Kahoot, stop motion animation, www.quizlet.com, www.quizziz.com, www.newsela.com, BBC ideas videos, Microsoft Forms, My drive, NEARPOD, Educational Television, Google Earth, Europeana, Geogebra, golabz.eu, e-arsakeio.gr, graasp, liveworksheets, geneal.ly, Learning apps, wordwall, safetube, Ed puzzle, learning apps, Google doc, quizzes, quiz let, thinglink, MOOCs, applications for creating posters, concept maps, comics etc digital tools for creating educational material, communication, online collaborative tools, digital repositories of educational material, digital interactive books.

Most frequently used digital tools by students

Likewise, when asked about the digital tools that students use many of them stated that they are the same tools that they also use (see above). From the ones that mention specific platforms/ tools used by students the most popular ones are those provided by the official educational system: Cisco Webex, dschool.edu.gr, e-class, e-me, ebooks photodentro, e-mathisi.mysch.gr, sch.gr. Other platforms mentioned were YouTube, Microsoft Teams, the British Council platform (Learn English kids), Zoom, Skype, TwinSpace Platform, the platform of the Center of the Greek Language (www.greek-language.gr), Musical library (https://mmb.org.gr/), Moodle.

Other tools were YouTube, Browsers, Wikipedia, BBC learning teens, PowerPoint, Microsoft Office, Search engines, text processors, emails, my drive, Google Drive/ Docs/ Forms, Padlet Scratch, Clideo, Renderforest, Quizlet, quizziz, Newsela, online dictionary and encyclopedias, graasp, e-arsakeio, quiztime, ziteboard, geogebra, educaplay crosswordlab gamelan, Learning apps, Ed puzzle, Tricider, padlet, linoit, cmap. Edmodo, jamboard, postermywall, Learning apps, ThingLink, formatting, creation, collaboration tools, word, data, audio, video, presentation, coding processors. Finally, they also list some social media, Instagram, Tic Toc, Viber.

Digital education approaches and practices in Romania

For Romania the use of digital tools seemed also to be surprisingly widespread among the participants in our survey, with **more than half of them** (51.7%) of them indicating that they **use digital tools inside the classroom** (such as online platforms, multimedia resources, shared repositories) **most of the time** and 19.5% indicating that they use the, all the time.

Comparatively, for asking students to **use digital tools for homework**, outside the classroom, these percentages were lower, with **39.5%** indicating that they do it **most of the time** and only 7.8% indicated doing it all the time.

Most used digital tools by teachers include Wordwall, Jigsawpuzzle, Kahoot, Twinkl, Wiki, Google forms, Liveworksheets, Google Jamboard, GeoGebra, gSuite, Pipo, Vooks, Testmoz, Mentimeter, Power Point, Liveworksheets, Nearpod, Genially, Canva, eTwinning, Edpuzzle, National Geografic, Art Camp, Paint, Corel, educatiacontinua.ro, www.edu.manuale.digitale, e-religie.ro, Animaker, Calameo, Storyjumper, Pinterest, Doodly, Socrative **,** Jaromania, VoluntApp**,** Manuale digitale, , www.dexonline.ro, Padlet, Boockcreator, Jigsawpuzzle, Vboard, most used platforms by teachers include Google Classroom, Edus, Quizizz, Learning Apps, Eduboom, ASQ, EDU, Educred, e- learning, History Lapse, Adservio, Piticlic, Lectii-Virtuale, Livresq, Clicmaclasse, Francaisfacile, Digitaliada, iTeach, FLE, ELE, Mykoolio, Mozabook, Mozaweb, red-religie.ro, Doxologia, Trinitas, www.fizichim.ro, pbinfo.ro, Profesorul digital, Ted, Baamboozle and most used channels by educators include Youtube, Esl, Teams, Zoom, Microsoft Teams, WhatsApp, Google Meet, Skype. Likewise, teachers list most of the above under the most used digital tools, platforms and channels used by students.

Digital education approaches and practices in Portugal

"The biggest challenge in achieving a more digital school is trying to change the culture of teachers in terms of their practice." (Jorge Nunes)

Also in Portugal the use of digital tools seemed to be surprisingly widespread among the participants in our survey, with **almost half of them** (46.5%) of them indicating that they **use digital tools inside the classroom** (such as online platforms, multimedia resources, shared repositories) **most of the time** and 17,8% indicating that they use the, all the time.

Comparatively, for asking students to **use digital tools for homework**, outside the classroom, these percentages were lower, with almost **one quarter of them** (25.7%) indicating that they do it **most of the time** and only 4% indicated doing it all the time.

Most used digital tools by teachers include: Kahoot, Mentimeter, PowerPoint, Padlet, Quizizz, Edpuzzle, Wordart, Windows Movie Maker, Stopmotion Studio, Genially, Geogebra, Educaplay, Flipgrid, FlipaClip, Microsoft Sway, WordWall, Emaze, Liveworksheets and teacherMade. The most used platforms and channels by teachers include: Canva, Whatsapp, Wordwall, Google Classroom, Google Meet, Teams, Google Suit, Zoom, Skype, Escola Virtual, Moodle, OneDrive, BBC learning, Khan Academy, Publishers Platforms, New York Times, Inovar, British Council Teens, Tricider, Santillana, Google Forms, Google Arts&Culture, ISLCollective, Webex, SGE, PORDATA, Centro de Informação Europeia Jacques Dellors, Socrative, LeYa, Windows, Strava and Plantnet. While most used channels by educators include: YouTube, #EstudoEmCasa, Deutsche Welle and IPMA.

Likewise, teachers list under the most used digital tools by students is: Quizizz, Edpuzzle, Powerpoint, Padlet, Mentimeter, Kahoot, Voki, Genially, Emaze, Leya, Educaplay, DeltaMath, Mathion, Geogebra, Socrative, FlipGrid, Popplet, Baamboozle, Child Diary and Seterra. Under the most used platforms and channels used by students are: Google Suit, Whatsapp, Google Classroom, Escola Virtual, Office, Google Classroom, Moodle, TED-Ed, Aula Digital, Canva, Porto Editora, Google Docs, SGE, WE EX, Zoom, Ubbu, Live Worksheets Cambride, BBC Learning, New York Times, Wordwall, Google Forms, Youtube, #EstudoEmCasa, E-mail, Google Meet and Teams.

"[Digital competences] evolved to a whole set of other skills, such as the cognitive and attitudinal ones, for example the issues of bullying, cyberbullying, the issue of fake news, and knowing how to analyze the veracity of information I find on the internet. Some teachers are already starting to do this type of exercises with students, some also know how to frame this in information literacy, digital literacy...but there is still a long way to go" (Filipe Santos).

Gamification is intended has a strategic that has the power to motivate and engage students`:

"Knowing that students are digital natives and that most of them spend their time playing online, the best way for us to develop and meet what they like, the needs of each one, is, for example, resorting to gamification in teaching. It's something they like and this can be a very suitable strategy because we're going to arouse more interest, more involvement and motivation in them. We have to create levels like in real games so they get involved and want to go further/learn more. They really like this kind of resources." (Alexandra Rodrigues)

Chapter 4

FORMATIVE NEEDS OF TEACHERS AND EDUCATORS AND THEIR TRAINING HABITS

Overview

Teachers' formative needs

When asked what types of digital skills and competencies teachers would like to improve in the future, more the majority of them (53.9%) **responded they would like to improve using digital technologies to enhance inclusion, personalisation and learners' active engagement.** Managing and orchestrating the use of digital technologies in teaching and learning followed with a percentage of 21.4%, while using digital technologies and strategies to enhance assessment was chosen by 13.6% and sourcing, creating and sharing digital resources, chosen by 11%. This trend was followed in all participating countries, except for Romania, where the responses were a bit more balanced among the 4 skill areas.

Furthermore, when asked about **specific skills** they would like to improve, within the skill areas they selected, **differentiation and personalisation** (22.1%) and **accessibility and inclusion** (19.7%) were the most popular ones. Actively engaging learners followed with an average of 12.5% and a varying popularity among the survey countries (11.5% for Greece, 21.7% for Italy, 7% for Portugal, 9.8% for Romania). Other skills that participants in specific countries seemed to be interested in were:

- self-regulated learning, defined as using digital technologies to support self-regulated learning processes with 7.3% for Greece,
- teaching with 8,5% and collaborative learning with 7.5% for Italy,
- teaching and assessment strategies, both with 8% for Portugal
- assessment strategies with 12.9%, collaborative learning with 9.3%, teaching with 8.2% and creating and modifying digital resources with 8.2% for Romania.
-

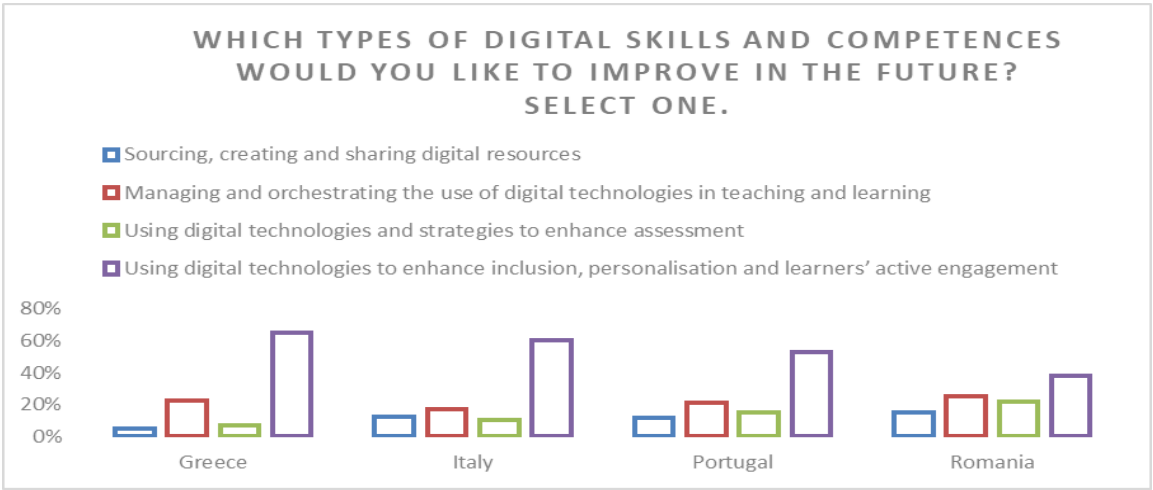

Figure 29 - Digital skill areas teachers would like to improve

Teacher training habits/ preferences

With regards to teachers' training habits/preferences for a training course on digital education, **the biggest percentage of respondents (54.9%) stated that they would prefer a training via online platforms,** 38.5% chose a blended format and only 6.7% chose an in-presence training.

Some country differences were observed, as presented in the following graph, with training via online platforms being slightly more popular for Romania (61.9%) and Greece (60%), compared to Portugal (53%) and Italy (44.8%). Likewise, the blended format was more popular in Italy (46.7%) and Portugal (42%), compared to Greece (32.6%) and Romania (32.5%).

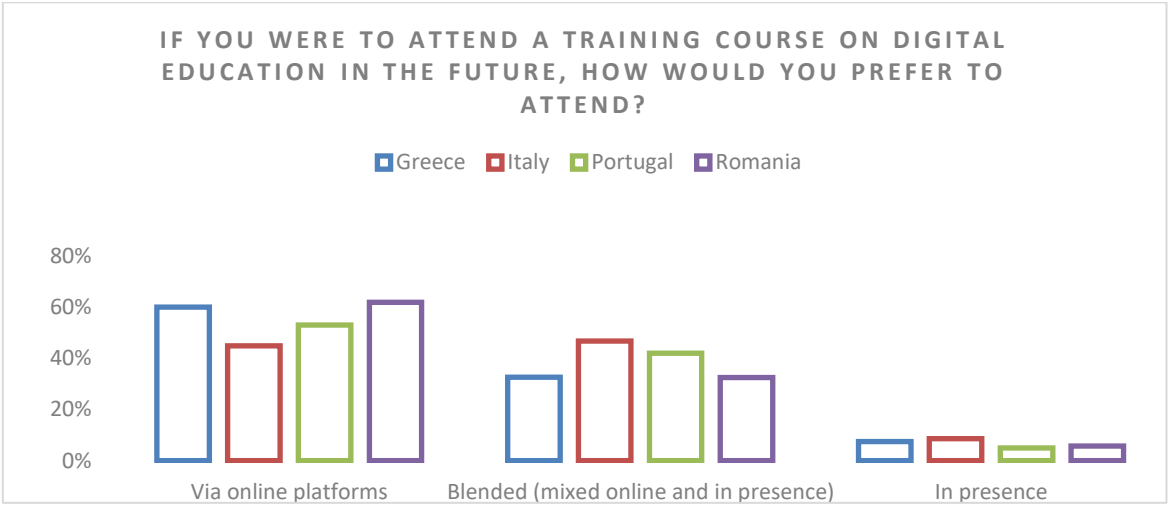

Figure 30 - Training course format preferences (online - blended - in presence)

And when asked what they consider more important in a teacher training offered, most of them selected the **access to additional services, platforms or other educational materials** (71.8%). **Flexibility, self-paced learning** (52.5%) followed on the weighted total, having a varying importance among the different countries (67% for Greece, 61% for Romania, but only 41.3% for Italy and 39.6% for Portugal). Opinions diverged in the different countries also regarding the other two options given, score in official (31% for Greece, 31.2% for Italy, 44% for Portugal, but only 9.8% for Romania) and certificate of attendance (32% for Greece, 30.2% for Romania but only 19.3 for Italy and 13.9% for Portugal).

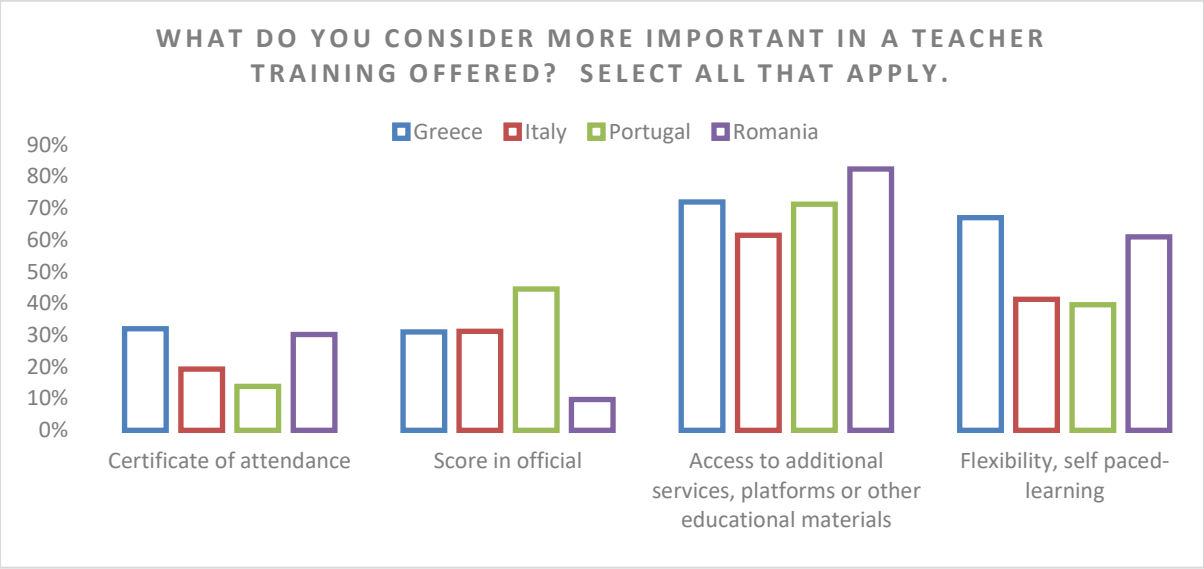

Figure 31 - Important aspects of a teacher training offered

Finally, with regards to specific tools/resources that they would consider useful for the adaptation of the use of ICT in Inclusive and Civic Education, more than half of them (50.9%) chose a specific **training course for teachers who teach civic education**, on digital education approaches and methodologies for teaching this subject and 41.9% selected **online educational resources** on the topics. Audio visual material on the topics followed with 35.9% on the weighted total and varying popularity among the countries (48% in Greece, 35.8% in Italy, 18.8% in Portugal and 41% in Romania) and the provision of guidelines on how to conduct civic education activities with students that utilize ICT with 29.7% on the weighted total (36% in Greece, 25.7% in Italy, 29.7% in Portugal and 27.3% in Romania).

Formative needs of teachers in Italy and their training habits

In August 2021 the Italian Ministry of Education approved the School Plan 2021-2022 (Document regarding school's organisational planning as well as educational and training activities)[59] which outlines the indications for face to face teaching. Related to in-service teacher training, it is stated that "it is necessary to organize training activities for teaching staff, so as to consolidate skills in the use of new technologies acquired in the previous two school years". The goal is that "digital" can become a reinforcement tool for "face to face" teaching and, more generally, a professional skill for all staff.

According to Fondazione Agnelli report[60]. Italy stands out on the international scene for the low level of initial training requirements of aspiring teachers. The counter-reform wanted in 2019 by Minister Bussetti (Conte 1 government) did not contribute to improving the preparation of incoming teachers provided for by the Buona Scuola decree. In the international context, Italy is also characterized by a destructured, fragmented in-service training with voluntary participation, characteristics that are not suitable for overcoming the already lacking initial training.

According to Fedeli, unfortunately new graduate teachers do not have the basic competences in terms of teaching methodologies, contrary to what is happening in other European countries. Only recently has didactics been included in Languages, Italian and History courses at University level.

[59] MIUR (2021) - Piano Scuola 2021-22
https://www.miur.gov.it/documents/20182/0/Piano+Scuola+21_22.pdf

[60] Rapporto Scuola Media 2021 – Fondazione Agnelli https://www.cnos-fap.it/sites/default/files/rapporti/fa_rapporto_scuola_media_2021.pdf

Within the framework of our research we focused our attention on the digital aspects of teaching. As with the competence gap mentioned above, also digital teaching competences are insufficiently transferred to future teachers.

Almost half of the respondents in our survey (47%) had attended a **training on the use of digital technologies in teaching and education** during the last year, and 14.7% a training on digital technologies. 40.4% did not attend any training on these topics during the last year.

Concerning the kind of organization which provided those training, 33% of the respondents answered that it was an educational institution (Ministry of Education or related authorities, agencies), in 11% of the cases it was provided by an NGO and in 6.4% of the cases a private training institution.

When asked about what types of digital skills and competencies teachers would like to improve in the future**, more than half of them** (60.4%) **answered that they would like to improve the use of digital technologies to enhance inclusion, personalisation and learners' active engagement,** in line with what emerged in Chapter 2.

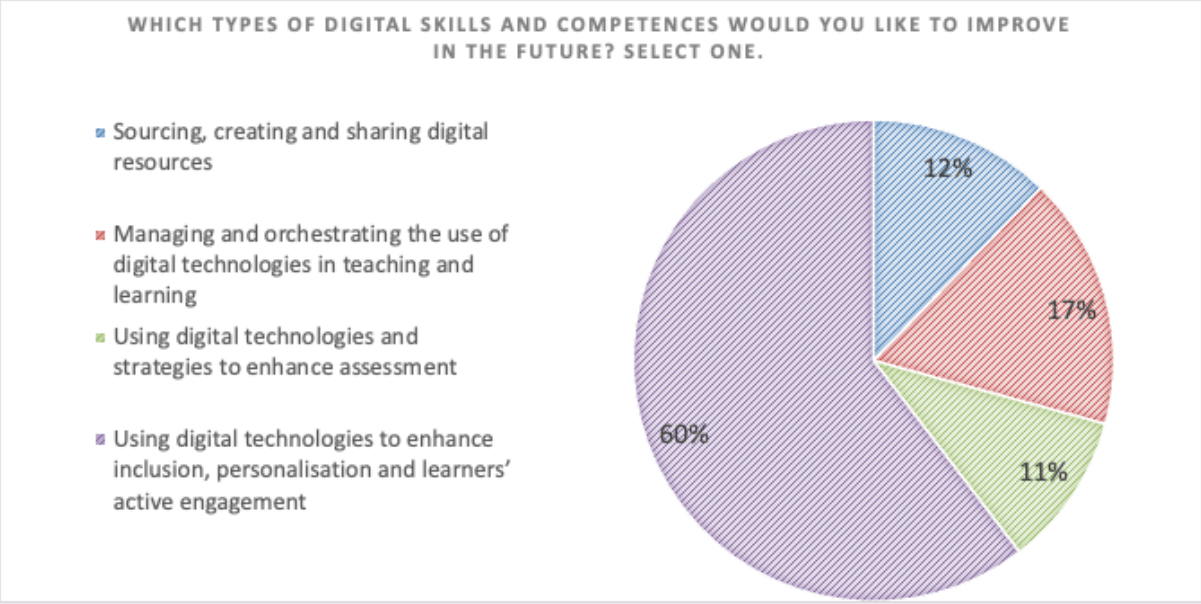

Figure 32 - Italy - Skills and competences that respondents would like to improve in the future.

Actively engaging learners (21.7%), differentiation and personalisation (19.8%) and accessibility and inclusion (18.9%) were the most popular specific skills that they would like to improve.

With regards to teachers' training habits/ preferences for a training course on digital education, 44.8% of respondents stated that they would prefer a training via online platforms**,** 46.7% chose a blended format and **only 8.6% opted for an in-presence training.**

When asked what they consider more important in a teacher training offered, most of them replied the **access to additional services, platforms or other educational materials (61.5%)**, followed by flexibility, self-paced learning (41.3%) and the score in official (31.2%).

Finally, with regards to tools/resources that they would consider useful for the adaptation of the use of ICT in Inclusive and Civic Education, 40.4% chose **a specific training course for teachers who teach civic education, on digital education approaches and methodologies for teaching this subject**, 39.4% chose online educational resources on the topics, 35.4% audiovisual material on the topics and 25.7% the provision of guidelines on how to conduct civic education activities with students that utilize ICT.

The need for training in the digital education field for the teachers who teach civic education was also highlighted by the interviewees.

> *If there is someone who can help teachers to understand how to do Civic Education at school as something new and exciting and not bureaucratic - this will cause a revolution.* Alessandro Fusacchia - Italian Deputy

It is quite probable that thanks to the remote learning implemented during several lockdowns, teachers became more aware of the opportunities offered by technologies in education and, above all, more aware of their training needs and concrete implementation of new digital skills. At the same time it appears essential to ensure all teachers -on a national level - with a common background of digital skills and competences, in order to provide homogeneous and quality teaching and learning.

Formative needs of teachers in Greece and their training habits

In Greece, **when asked what types of digital skills and competencies teachers would like to improve in the future, more the majority of them** (64.9%) **responded they would like to improve using digital technologies to enhance inclusion, personalisation and learners' active engagement.** Managing and orchestrating the use of digital technologies in teaching and learning followed with a percentage of 22.7%, while using digital technologies and strategies to enhance assessment was chosen by 7.2% and sourcing, creating and sharing digital resources, chosen by 5.2%.

Furthermore, when asked about **specific skills** they would like to improve, within the skill areas they selected, **differentiation and personalisation** (29.2%) and **accessibility and inclusion** (25%) were the most popular ones.

With regards to teachers' training habits/ preferences for a training course on digital education, **the biggest percentage of respondents (60%) stated that they would prefer a training via online platforms,** 32.5% chose a blended format and only 7.4% chose an in-presence training.

This is also in line with the Communication from the European Commission on school development and excellent teaching according to which collaborative environments and digital technologies can enhance teacher learning and educational innovations such as collaborative peer networks, massive open online courses (MOOCs), and the sharing of open educational resources can complement traditional workshops and training courses and help overcome barriers to participation.[61]

And when asked what they consider more important in a teacher training offered, most of them selected the **access to additional services, platforms or other educational**

[61] European Commission (2017). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. School development and excellent teaching for a great start in life*. SWD(2017) 165 final. COM(2017) 248 final.

materials (72%), followed by **flexibility, self-paced learning** (67%). Certificate of attendance and score in official gathered smaller percentages (32% and 31% respectively), while 7% added other aspects such as enhancing digital creativity / educational innovation, learning during teaching without the obligation of deliverables, providing substantial training within teaching hours one week each year, financial / continuous support through specialized collaboration teams, free access to modern interactive tools and platforms and of course the knowledge that someone acquires.

Finally, with regards to specific tools/resources that they would consider useful for the adaptation of the use of ICT in Inclusive and Civic Education, more than half of them (52%) chose a specific training course for teachers who teach civic education, on digital education approaches and methodologies for teaching this subject and almost half of them (48%) selected audiovisual material on the topics. 42% chose online educational resources on the topics and 36% the provision of guidelines on how to conduct civic education activities with students that utilize ICT.

Formative needs of teachers in Romania and their training habits

In Romania, when asked what types of digital skills and competencies teachers would like to improve in the future, 37.9% of them responded that they would like to improve the use of digital technologies to enhance inclusion, personalisation and learners' active engagement and 25% of them that they would like to improve managing and orchestrating the use of digital technologies in teaching and learning. Differentiation and personalisation (15.5%), accessibility and inclusion (12.9%) and assessment strategies, the use of digital technologies for formative and summative assessment (12.9%) were the most popular specific skills that they would like to improve.

With regards to teachers' training habits/ preferences for a training course on digital education, **the biggest percentage of respondents (61.9%) stated that they would prefer a training via online platforms,** 32.5% chose a blended format and only 5.7% chose an in-presence training.

And when asked what do they consider more important in a teacher training offered, most of them replied the **access to additional services, platforms or other educational materials** (82.4%), followed by flexibility, self-paced learning (61%), certificate of attendance (30.2%) and the score in official (9.8%%).

Finally, with regards to tools/resources that they would consider useful for the adaptation of the use of ICT in Inclusive and Civic Education, 52.7% chose **online educational resources on the topics**, 47.8% chose a specific training course for teachers who teach civic education, on digital education approaches and methodologies for teaching this subject, 41% audiovisual material on the topics and 27.3% the provision of guidelines on how to conduct civic education activities with students that utilize ICT.

Formative needs of teachers in Portugal and their training habits

In Portugal, **when asked what types of digital skills and competencies teachers would like to improve in the future, more than half of them** (52.5%) **responded they would like to improve the use of digital technologies to enhance inclusion, personalisation and learners' active engagement.** Differentiation and personalisation (24%) and accessibility and inclusion (22%) were the most popular specific skills that they would like to improve.

With regards to teachers' training habits/preferences for a training course on digital education, **the biggest percentage of respondents (53%) stated that they would prefer a training via online platforms,** 42% chose a blended format and only 5% chose an in-presence training.

And when asked what they consider more important in a teacher training offered, most of them replied the access to additional services, platforms or other educational materials (71.3%), followed by the score in official (44.6%) and flexibility, self paced learning (39.6%).

Finally, with regards to tools/resources that they would consider useful for the adaptation of the use of ICT in Inclusive and Civic Education, 63.4% chose a specific training course for teachers who teach civic education, on digital education approaches and methodologies for teaching this subject, 33.7% chose online educational resources on the topics, 29.7% the provision of guidelines on how to conduct civic education activities with students that utilize ICT and 18.8% audiovisual material on the topics .

Chapter 5

RELATIONS BETWEEN DIGITAL TECHNOLOGIES AND TEACHING; RISKS AND NEW OPPORTUNITIES

Overview

Teachers' attitudes towards the use of digital tools in education

In general, teachers participating in the survey seemed to have a positive attitude towards digital technologies in education, agreeing that **digital tools make a positive difference on learning** (87% agree or strongly agree), that they **make learning more interesting** (89% agree or strongly agree), **teaching easier** (79% agree or strongly agree), that they **provide learning opportunities outside the classroom** (90% agree or strongly agree) and **enhance learning inside the classroom** (90% agree or strongly agree), as well as agreeing that digital tools **encourage students to collaborate even when not together** (78% agree or strongly agree).

Challenges and risks of digital education

Nevertheless, some risks and **challenges** were identified with regards to integrating digital education inside the school. Almost half of the respondents in our survey selected the **need of suitable and up-to-date equipment** (47.9%). This percentage was bigger for respondents working in public schools (50%) compared to respondents working in private schools (22%). **Insufficient digital competences among teachers** followed in popularity being selected by approximately one third of respondents (30.8%). The percentage of respondents choosing this answer was comparatively higher among participants with less than 5 years of experience (47%) and more than 20 years of experience (34%). Next in popularity was the need of internet connection (24.3%), followed by other challenges with smaller percentages, such as less inclusion of vulnerable students with 21.3%, the existence of more distractions, the difficulty of managing time (14.2%), the difficulty to adapt materials and teaching methodology (13.4%).

Furthermore, in the case of distance education, also the challenges identified in chapter 1 should be taken into account.

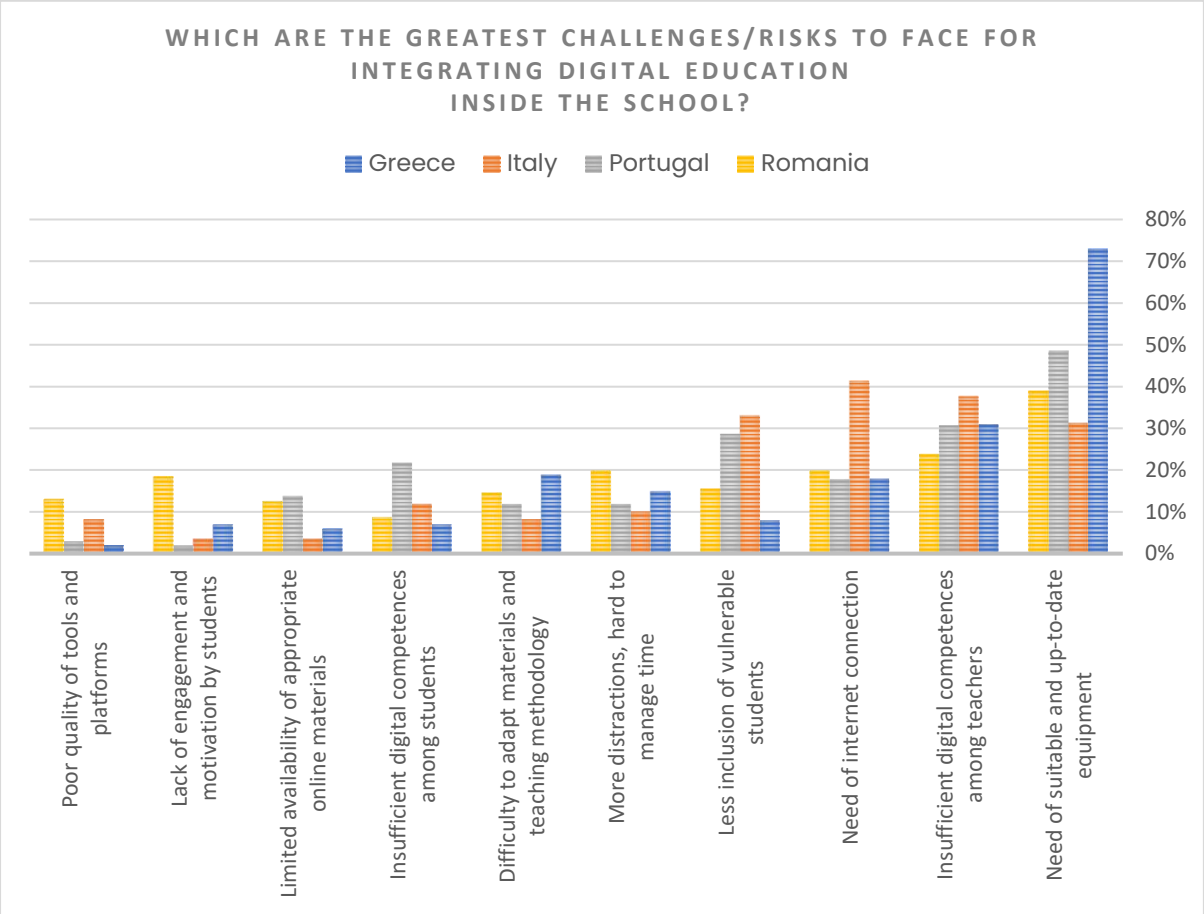

Figure 33 - Challenges/ risks to face for integrating digital education in the classroom

On average across OECD countries in 2018, there was almost one computer available at school for educational purposes for every 15-year-old student (computer-student ratio equal to 0.8). In Austria, Iceland, Luxembourg, Macao (China), New Zealand, the United Kingdom and the United States, the computer-student ratio was 1.25 or more, while in Albania, Brazil, Greece, Kosovo, Montenegro, Morocco, Turkey and Vietnam, there was only one computer available for every 4 students (ratio = 0.25) or less. All countries participating in our search were under the OECD average.[62]

Access to the internet seems to be universal for all school computers in our reference countries (more than 9 out of 10 computers available to 15-year-olds for educational purposes at school were connected to the Internet).[63] Nevertheless, when further

[62] OECD (2020), *PISA 2018 Results (Volume V): Effective Policies, Successful Schools*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/ca768d40-en.
[63] Ibid.

analysing the type of internet connection provided, according to the European Commission report "2nd Survey of Schools: ICT in Education" (2019), for primary schools 17% of students in Greece, 31% of students in Italy, 38% of students in Portugal and 52% of students in Romania, are in a school with access to the Internet via fibre optic, compared to the EU average of 32%. Same goes for lower secondary where the percentages are 30% in Italy, 51% Portugal and 54% Romania, compared to the EU average of 40%, and for upper secondary where the percentages are 34% for Greece, 47% for Italy, 57% for Romania, 57% for Portugal, compared to the EU average of 51%.[64]

Finally, when opening the discussion on the risks involved in digital education, we must also consider issues such as safety, privacy and well-being, as well as the increasing concerns related to the 'datafication of childhood'[65].

Advantages and opportunities of digital education

In the literature on ICT in education, there are many associated advantages and **opportunities** presented. Indicatively, assisting students in accessing digital information efficiently and effectively, supporting student-centred and self-directed learning, producing a creative learning environment, promoting collaborative learning in a distance-learning environment, offering more opportunities to develop critical (higher-order) thinking skills, improving teaching and learning quality, supporting teaching by facilitating access to course content[66] are some of them. Specifically, for the of use of digital technology for Global Citizenship Education (GCE) the advantages include: 1) possibilities for children and young people to experience global citizenship 2) a shift towards a more participatory approach 3) support for teachers' activities[67].

For the purpose of the BET survey, we separately investigated opportunities/advantages of the use of digital technologies for education for two different cases, their use in the classroom and outside the classroom. In the

[64] European Commission. (2019). *2nd survey of schools: ICT in Education*. Luxembourg, Publications Office of the European Union 2019 ISBN 978-92-79-99675-7 doi: 10.2759/23401

[65] Martínez Sainz, Gabriela & Barry, Maria. (2020). *Digital Technologies to Advance Global Citizenship Education in Schools*. 10.13140/RG.2.2.24397.05600.

[66] Fu, J. (2013). *Complexity of ICT in education: A critical literature review and its implications. International Journal of Education and Development using ICT, 9(1), 112-125*. Open Campus, The University of the West Indies, West Indies.

[67] Martínez Sainz, Gabriela & Barry, Maria. (2020). *Digital Technologies to Advance Global Citizenship Education in Schools*. 10.13140/RG.2.2.24397.05600.

case of using such technologies **in the classroom**, the most popular answer choices among the respondents of our survey, where that they provide **innovative and engaging ways of teaching/learning** (35.9%), **increased engagement and motivation by students** (28.9%), **innovative and engaging learning materials** (28.8%), **helping learners develop digital skills** (24.4%) and **flexibility, learning/teaching at one's own pace** (19.5%).

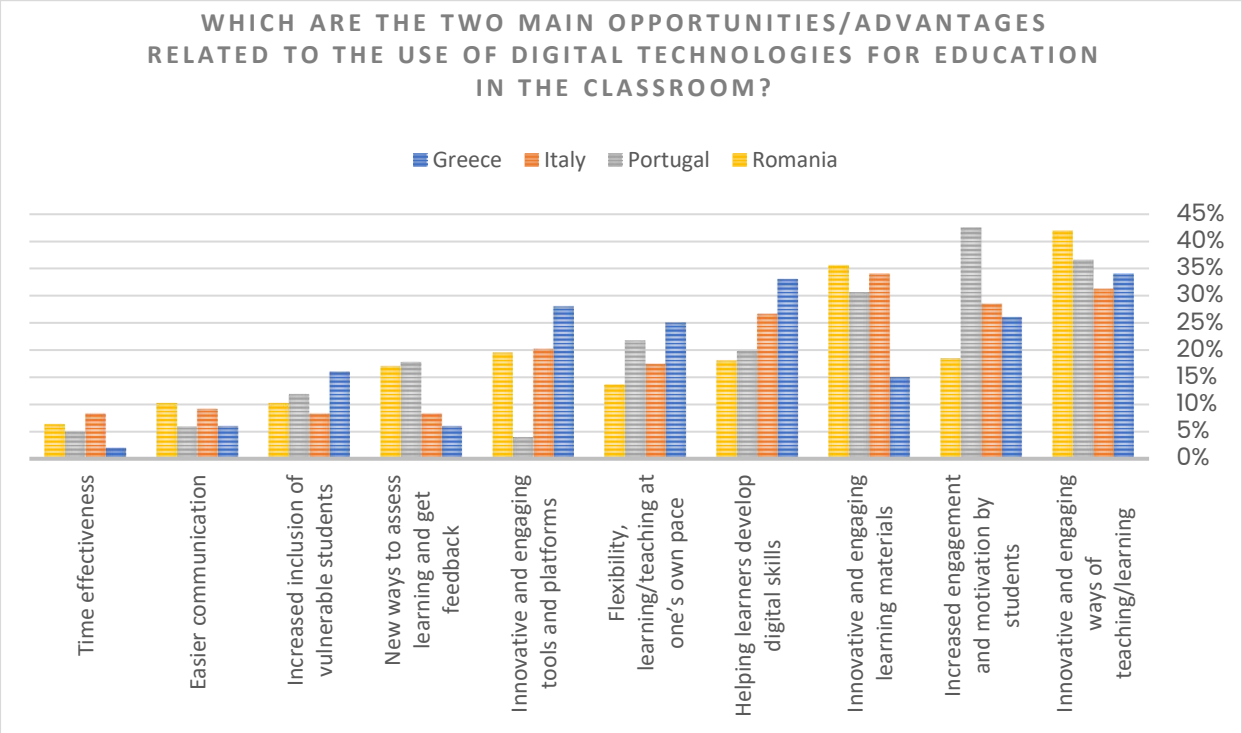

Figure 34 - Opportunities/ advantages related to the use of digital technologies for education in the classroom

As to opportunities/advantages related to the use of digital technologies for education **outside the classroom** (e.g. for homework) it goes from **flexibility, learning/teaching at one's own pace** (36.8%), **increased engagement and motivation by students** (23.3%), **helping learners develop digital skills** (23%), **innovative and engaging learning materials** (19%), **new ways to assess learning and get feedback** (18.3%), **innovative and engaging ways of teaching/ learning** (17.2%) and **easier communication** (15.7%).

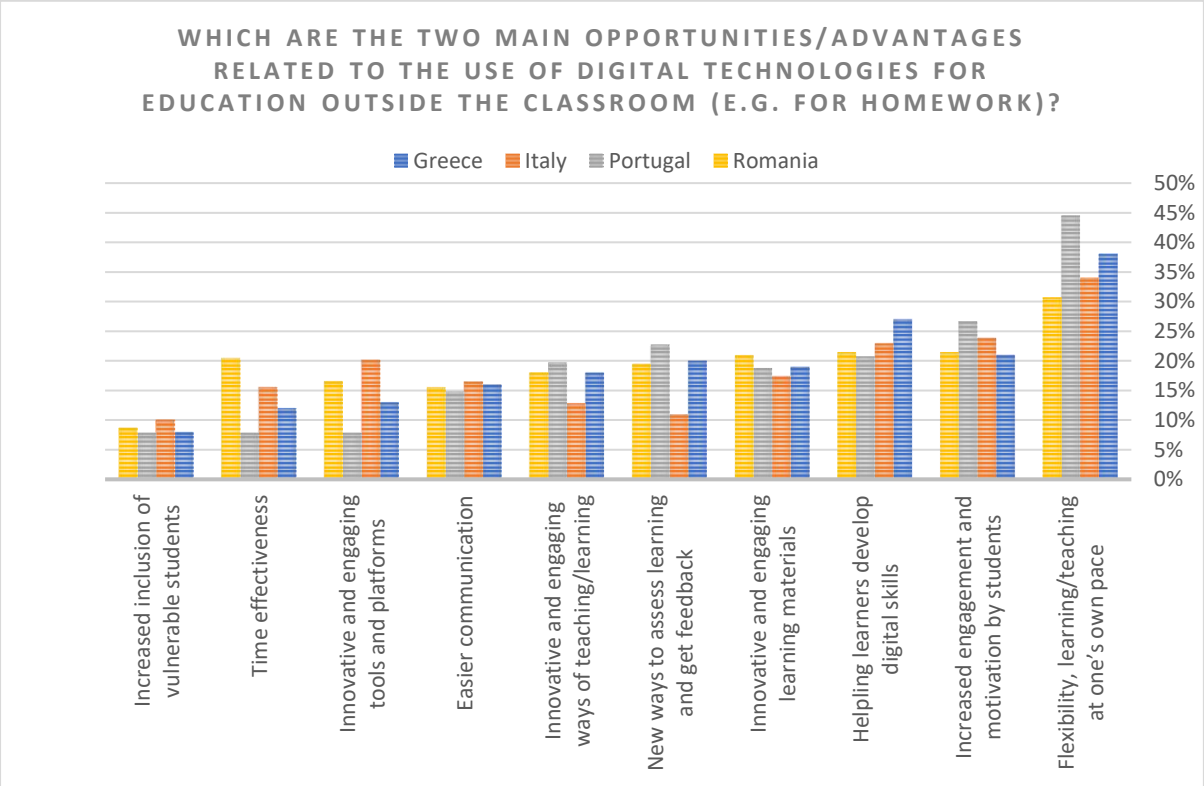

Figure 35 - Opportunities/ advantages related to the use of digital technologies for education outside the classroom

Relations between digital technologies and teaching; risks and new opportunities - Italy

During the COVID emergency, huge gaps have emerged in the country and in the school system, starting from a patchy internet connection where entire areas are poorly served or not at all. There are also gaps between the degrees of digitization of schools, with a wide range starting from models of excellence to cases of extreme backwardness, social gaps, measurable in the digital divide, but also in the absence of suitable devices for work, since a smartphone, that despite if, widely owned, it cannot always be the right tool for the work required in educational platforms.

The pandemic has, on the other hand, accelerated a digital revolution in schools, demonstrated also by a big investment in broadband internet connectivity. The most recent data about the state of Internet Connectivity in schools was released by the new Communications Authority (Agcom) in June 2020. Out of the 75,361 school buildings surveyed, 42% were covered by ultra-broadband services, 18% had fttc (Fiber to the Cabinet), 17 % receive fiber up to the home (ftth), other 17% could not aspire to anything more than an ADSL and 6% were totally unconnected. The Connected Schools Plan which is included in the decree published on 7th August 2020 by the Minister of Economic Development set the goal to provide approximately 35,000 school buildings with Internet access based on 1 Gbit / s connectivity for each school by 2023.

Beside the national investment in enhancing connectivity, the attitude of users (teachers) is crucial for the development of digital teaching. Teachers participating in the BET! survey seemed to have a positive attitude towards digital technologies in education, agreeing that **digital tools make a positive difference on learning** (93% agree or strongly agree), that they **make learning more interesting** (84% agree or strongly agree), **teaching easier** (69% agree or strongly agree), that they **provide learning opportunities outside the classroom** (91% agree or strongly agree) and **enhance learning inside the classroom** (87% agree or strongly agree), as well as

agreeing that digital tools **encourage students to collaborate even when not together** (73% agree or strongly agree).

Despite this big effort to unlock the potential of digital technologies for learning and teaching and to develop digital skills, it is important to consider that the use of technologies in Education is not a risk-free journey. A critical and conscious use of technology is necessary, unless the risk of ineffectiveness of the technological equipment is high. In fact, relevant research[68] has proven that technology could change education negatively in four ways: deteriorating students' reading and writing competences, dehumanizing educational environments, distorting social interactions between teachers and students and isolating individuals when using technology.

Considering and mitigating other risks, teachers must **pay great attention to the issue of privacy**, when dealing with digital technologies:

> *"Privacy is also a matter of respect, an agreement between platform users, but it is also the ability of a teacher to know how to manage children when using technologies remotely, even with precautions related with privacy. The intrusiveness of these tools is physiological and therefore it is included in the teachers' competencies.* Alessandro Fusacchia - Italian Deputy

Beside these general reported risks, our survey also investigates the main **challenges** identified in integrating digital education inside schools, the most frequently selected ones being the **need for internet connection** (41.3%), **insufficient digital competences among teachers** (37.6%), **less inclusion of vulnerable students** (33%) and **need of suitable and up-to-date equipment** (31.2%). Furthermore, in the case of distance education, also the challenges identified in chapter 1 should be taken into account.

[68] Alhumaid K. (2019) - Four Ways Technology Has Negatively Changed Education - Zayed University, UAE https://www.researchgate.net/publication/336969538_Four_Ways_Technology_Has_Negatively_Changed_Education

The stakeholders interviewed warned of the most significant challenge for digital education, already identified by the responses to the survey. In particular, they found that some teachers need to **change their approach to digital technologies**:

> *Training teachers in the use of technology is necessary, as is a change of approach: it is important to understand that technology is part of everyday lives and the school must therefore also teach digital citizenship to students."* Rita Giancotti - School Head

With regards to opportunities/advantages related to the use of digital technologies for education, these are again separately analysed for two different cases. In the case of using such technologies **in the classroom**, it was stated that it would provide **innovative and engaging learning materials** (33.9%), **innovative and engaging ways of teaching/learning** (31.2%), **increased engagement and motivation by students** (28.4%) as well as **helping learners develop digital skills** (26.6%). As with opportunities/ advantages related to the use of digital technologies for education **outside the classroom** (e.g. for homework) it goes from **flexibility, learning/teaching at one's own pace** (33.9%) to the **increased engagement and motivation by students** (23.9%) and **helping learners develop digital skills** (22.9%).

One of the main opportunities that stakeholders identified during the interviews concerns the possibility of **reducing inequalities between territories**, in particular **inland areas and areas at risk of depopulation:**

> *The digital can help solve dilemmas that seemed unsolved before today. For example, regarding internal areas, a hybrid teaching could be envisaged, at school and in remote. This can help reduce inequalities between geographical areas.* Alessandro Fusacchia - Italian Deputy
>
> *At a global level, Digital Learning is something that, if implemented appropriately, allows a student in a poor area to attend a school for rich people. It helps to overcome the training opportunities due to the context and to choose the school more suitable to personal development*. Andrea Benassi - INDIRE Researcher

In their responses to the survey, teachers also highlighted the possibilities arising from technologies for vulnerable students. These can ensure greater flexibility in learning and also have additional advantages for this specific target of students:

In some cases the most vulnerable students are not very extroverted, with digital education they can interact without necessarily speaking or questioning themselves Teacher from Tuscany in a non-urban area/rural area, Literature, grammar, 16-20 years of experiences, F, 48

Materials are more adaptable compared with traditional ones. - Teacher from Tuscany, In an urban area, Literature, grammar, 6-10 years of experiences, M, 46

Through digital tools, vulnerable students could feel more involved in the school work and in peer debates - Teacher from Calabria, in a non-urban area, Literature, grammar, Civic education, 11-15 years of experience, F, 48

Relations between digital technologies and teaching; risks and new opportunities – Greece

Teachers' attitudes towards the use of digital tools in education

In general, teachers participating in the survey seemed to have a positive attitude towards digital technologies in education, agreeing that **digital tools make a positive difference on learning** (79% agree or strongly agree), that they **make learning more interesting** (91% agree or strongly agree), **teaching easier** (71% agree or strongly agree), that they **provide learning opportunities outside the classroom** (86% agree or strongly agree) and **enhance learning inside the classroom** (89% agree or strongly agree), as well as agreeing that digital tools **encourage students to collaborate even when not together** (71% agree or strongly agree).

Challenges and risks of digital education

Nevertheless, some risks and **challenges** were identified with regards to integrating digital education inside the school, with the majority of the respondents in our survey (73%) selecting the **need of suitable and up-to-date equipment.** This finding is also backed up by data available on the existence of equipment in greek schools. Regarding the number of computers available for students in schools, according to the 2018 PISA report[69], the OECD average is almost one computer available at school for educational purposes for every 15-year-old student (0.8 ratio). Greece perfoms under the OECD average, being listed among the most poorly performing countries Albania, Brazil, Kosovo, Montenegro, Morocco, Turkey and Vietnam, where there was only one computer available for every 4 students or less (0.25 ratio or less).[5] More in detail, according to the European Commission report "2nd Survey of Schools: ICT in Education" (2019), Greece is performing better than the EU average on number of students per computer for primary education (11 in Greece - 18 EU average) and worse than the EU

[69] OECD (2020), *PISA 2018 Results (Volume V): Effective Policies, Successful Schools, PISA, OECD Publishing*, Paris, https://doi.org/10.1787/ca768d40-en.

average in lower secondary education (12 in Greece - 7 EU average) and in upper secondary education (19 in Greece - 8 EU average)[6]. Finally, the existing equipment must also be operational. In Greece, only 63% of primary school students, 42% of lower secondary school students and 70% of upper seconary school students are in schools where more than 90% of equipment is operational.[5] Nevertheless, it has to be taken into account that this data dates back to 2018 and since then investments have been made in schools technological equipment, while more investments are planned for the future.

Insufficient digital competences among teachers, was the second most popular challenge, selected by approximately one third of respondents (31%). To explain this result we will have to reflect on the findings of chapter 2 of this report, regarding teacher competencies and preparedness.

Other challenges followed with smaller percentages, such as the **difficulty to adapt materials and teaching methodology** (19%), the need of internet connection (18%) and the existence of **more distractions**, the difficulty of **managing time** (15%). Furthermore, in the case of distance education, also the challenges identified in chapter 1 should be taken into account. With regards to access to **internet connection of schools**, more than 9 out of 10 computers available to 15-year-olds for educational purposes at schools in Greece were connected to the Internet.[5] Nevertheless, according to the European Commission report "2nd Survey of Schools: ICT in Education" (2019), Greece perfoms under the EU average with regards to schools that have access to the Internet via fibre optic. More specifically, for primary schools, 17% of students in Greece are in a school with access to the Internet via fibre optic compared to the EU average of 32%. Likewise for high schools 34% of the students in Greece are in a school with access to the Internet via fibre optic, compared to 51% of the EU average. Furthermore, Greece, is also scoring low in terms of availability of Wireless LAN connection in schools. Only 25% of primary school students in Greece are attending schools with wireless LAN, compared to the EU average of 46%[70].

[70] European Commission. (2019). *2nd survey of schools: ICT in Education*. Luxembourg, Publications Office of the European Union 2019 ISBN 978-92-79-99675-7 doi: 10.2759/23401

Finally, when opening the discussion on the risks involved in digital education, we must also consider issues such as **safety**, **privacy** and **well-being**, as well as the increasing concerns related to the '**datafication of childhood**'[71].

Advantages and opportunities of digital education

In the literature on ICT in education, there are many associated advantages and **opportunities** presented. Indicatively, assisting students in accessing digital information efficiently and effectively, supporting student-centered and self-directed learning, producing a creative learning environment, promoting collaborative learning in a distance-learning environment, offering more opportunities to develop critical (higher-order) thinking skills, improving teaching and learning quality, supporting teaching by facilitating access to course content[72] are some of them.

For the purpose of the BET survey we separately investigated opportunities/ advantages of the use of digital technologies for education for two different cases, their use in the classroom and outside the classroom. In the case of using such technologies **in the classroom**, the most popular among the respondent of our survey, where that they provide **innovative and engaging ways of teaching/learning** (34%), **helping learners develop digital skills** (33%), **innovative and engaging tools and platforms** (28%) as well as **increased engagement and motivation by students** (26%) and **flexibility, learning/teaching at one's own pace** (25%).

As to opportunities/ advantages related to the use of digital technologies for education **outside the classroom** (e.g. for homework) it goes from **flexibility, learning/teaching at one's own pace** (38%), **helping learners develop digital skills** (27%) to the **increased engagement and motivation by students** (21%), **new ways to assess learning and get feedback** (20%) and **innovative and engaging learning materials** (19%) and **innovative and engaging ways of teaching/learning** (18%).

In particular as regards the opportunity of students developing digital skills, that is listed by teachers both for the case of the use of digital technologies inside the classroom, as well as for their use outside the classroom, despite the fact that today's

[71] Martínez Sainz, Gabriela & Barry, Maria. (2020). *Digital Technologies to Advance Global Citizenship Education in Schools*. 10.13140/RG.2.2.24397.05600.

[72] Fu, J. (2013). *Complexity of ICT in education: A critical literature review and its implications. International Journal of Education and Development using ICT, 9(1), 112-125*. Open Campus, The University of the West Indies, West Indies.

students are digital natives, its importance remains increased for the Greek context. According to the Education and Training Monitor 2020 report[73] of the European Commission **few students report above average digital skills** (32% for Greece compared to the EU-27 average off 57%).

[73] European Commission (2020). *Education and Training Monitor 2020 Country Analysis*, Luxembourg: Publication Office of the European Union.

Relations between digital technologies and teaching; risks and new opportunities – Romania

Challenges and risks of digital education

Some risks and **challenges** were identified with regards to integrating digital education inside the school, with the most frequently selected ones in Romania being the **need of suitable and up-to-date equipment** (39%), **insufficient digital competences among teachers** (23.9%), **need of internet connection** (20%), **more distractions, hard to manage time** (20%), lack of engagement and motivation by students (18.5) and less inclusion of vulnerable students (15.6%). Furthermore, in the case of distance education, also the challenges identified in chapter 1 should be taken into account.

From the interviews, when asked "How can the skills of teachers for using digital tools to **encourage inclusion, personalization and engagement of students** be strengthened?", the answers were:

Through the efficient use of digital skills of the teachers, students were motivated to also learn how to use some tools for their educational benefit. Students with problems, more withdrawn, more shy were encouraged online to express their own point of view and have improved their personal skills. They found their voice, they found an environment to express themselves because they were not forced to open their camera. They had time to think, reflect and engage. When you are not forced to open your camera people will not see your race, your skin colour etc. Some were exceptional compared to their class performance.

Not being face to face anymore, a decrease in the bullying phenomenon was also achieved.

In many disadvantaged rural areas, most students are from large families, have a single tablet, do not have personal space to learn because they live in the same room with other siblings and parents. Half of the students are in this situation. Most parents do not focus on education but on working in the household. When they come to school

they have their own space, but at home they consider that online learning is a kind of vacation.

We should encourage them through joint activities with teachers and students from other schools and other regions. We have not tried meetings with other parents because they have very big fears. They are ashamed to see themselves on camera; they feel that they are too exposed, that they cannot control the communication part. Before coming to school they are very vocal, but when they come to meetings they don't talk at all.

We can personalise the learning experiences online by using various dedicated platforms. For example, we have a company in Finland for mathematics that offers a lot of games to play with mathematical expressions where students can do more exercises if they have difficulties and the teacher can see who needs extra help and can personalise their lessons according to their needs.

Regarding engagement, it can be strengthened or not. Not having a camera on it's a challenge because you do not have the non-verbal feedback anymore and is not a plus for engagement. In another way you can have a lot of engagement that is very different from what we understood before. If you have an entire theatre with the students face to face, they can be on their phones anyway and you might not notice. At the same time we can create engagement if we learn how to bring their phones into the lessons as a teaching tool in order to increase engagement. The lesson does not finish when the class finishes but online you can continue to engage online with your own peers.

From the interviews, when asked "Why are there these **gaps and needs among teachers** in our country? What characteristics should a training course have to fill these gaps and meet the needs of teachers?", we concluded that:

Rural teachers place more emphasis on family than urban teachers. In the countryside they also take care of the yard, the garden, the daily food, etc. What determined them to get involved, however, was the competition with younger teachers who were more open to digitalization.

Digital skills have become a necessity in a teacher's life. That doesn't mean we have to be addicted to them. Discrepancies arise from the way we view the profession of teacher which is an eminently moral one. If you as a teacher have not managed to develop your digital competence then it is a violation of the service obligations but also

a violation of the morality of our profession. I don't understand teachers who failed to complete their digital skills.

Example of good practice: a history teacher with visual impairment asked for the help of the physical education teacher who assists him online only so that his students do not suffer from not having an efficient history lesson.

The digital expert recommends to the teachers he trains: Do not concentrate only on what I am saying but look at what I am doing: the name of the platform, the name of resource and ask for them.

We need time to fill the gaps, to implement, to train them, assist them, coach them, to have **instructional coaches in each school.** The teachers were not used to all of this. They were not obliged to use online tools. A lot of them used digital tools because they had to. It was learning by doing.

School directors: We need a course on **how to motivate students** (even online, how to evolve correctly using digital skills, a course that should be the consistency of an online course, how to do an effective course, an effective test. It should be a **challenging enough** course to make me aware of my needs to develop my digital skills.

Digital expert: The characteristic for a training to fill these gaps has to be an example about how to deliver their classes. We have to show them what an online class looks like for real, not only teach them the tools themselves. We need to use some fun and engaging resources, to give them **assistance on developing and delivering** an online class. They are not usually autonomous learners. They need a bit of push from a coach or mentor. We need to teach them "button to button" sort of say. We have to bring a lot of our non-formal learning into digital education, **put them in the hot seat** and experience themselves on how to use them, no matter if it's a game or an application. **It works when they do first**; they play with tools themselves and then learn the theoretical part of the digital tools in order to develop their own digital classes with their specific content.

In 2020: Implementation of the programme The School at Home – the procurement of 250,000 electronic devices with internet connexion for students and teachers and the payment of the internet subscription for 2 years (Government Decision no. 370/2020). The criteria for their assignment shall be determined by a minister order. Output indicators: the number of beneficiaries – 250,000 beneficiaries.

Romania is part of the European laggards in terms of readiness for digital learning. It ranks 24th on the overall index, with very poor scores on learning participation and outcomes and availability of digital learning.

• It performs better in terms of institutions and policies. Policymakers are aware of the importance of digitalisation of education and, in cooperation with the European Commission, have developed a national strategy in this regard.

Takeaways: What can we learn from this country?

• The Ministry of Education has started to create learning materials and open educational resources. ICT is increasingly important in the curriculum, in students'

assessments and teachers' training.

• In higher education, investments in digital learning depend significantly on EU funds. Universities are increasingly using open technologies, online educational platforms and e-learning methods.

• However, lack of substantial support for innovation or experimentation hinders further developments.

From the interviews, when asked which are **the greatest challenges and obstacles** to face for achieving a more digital school:

From the perspective of a rural school, the biggest challenge is the infrastructure: the Internet, computers. Then the education of teachers and students is deficient compared to those in urban areas. Resistance to the new and to technology is much higher than in urban areas, both for students, teachers but especially for parents who cannot help their children at home because they do not have digital skills. We had support from the School Inspectorate and the Ministry of Education as well as other private actors who donated laptops and phones. We did not reach the digital performance but we managed to manage well.

We have smart boards, video projectors, and we use digital textbooks even before the pandemic. The biggest challenge is how we evaluate what we have done. How do we evaluate what students do? I used google forms questionnaires until the students realized that they could exchange answers. We must not end up in accusations of fraud, fear. Emotional balance is very important. In classical pedagogy we still have to work, in evaluation but also in online pedagogy.

We faced in many situations bad Internet connection because we are in a hollow area and sometimes 1or 2 hours in a row we had zero connection, but we compensated with WhatsApp groups. Sometimes students can cheat on homework by using online tools. It can take them a little more to deepen certain topics because it does not allow them to have a critical analysis on the topic.

We need to be trained in order to create learning resources for our students. Teacher training is a challenge now. We have a population of teachers close to the end of their careers and we need to train them also. Also we need to create entertaining learning experiences in order to apply all the knowledge.

Some obstacles are related to offering tablets, laptops and free digital platforms and tools. Also we do not have in schools specialised personnel to maintain the hardware and software and update it all. Each year we need to update everything and we need an IT specialist in each school to do that.

Advantages and opportunities of digital education

In order to support and facilitate the continuity of education by means of online learning, the Ministry of Education and Research has created the online platform Digital. It centralizes resources and information for both teachers and learners on distance learning: digital education resources, instruments for online learning platforms, communication tools, links to teacher support groups, links to other useful platforms and applications, information on online training opportunities and webinars for teachers, links to the official preparations tests for national exams, open education resources developed by teachers.

In addition, the platform www.manuale.edu.ro, provides the digital version of all textbooks approved by the Ministry of Education and Research, which can be accessed and downloaded for free.

The Ministry of Education and Research in partnership with the Romanian Public Television (TVR) has launched an educational TV programme, called Teleșcoala (Tele-school), which consists of video lessons broadcasted from Monday to Friday on two of the TVR's channels. The lessons are addressed to 8th and 12th grade pupils to help them prepare for the national exams. Besides Romanian, the lessons are also delivered in Hungarian.

In the BET survey, with regards to opportunities/ advantages related to the use of digital technologies for education, these are again separately analysed for two different cases. In the case of using such technologies in the classroom, it was stated that it

would provide **innovative and engaging ways of teaching/learning** (42%), as well as **innovative and engaging learning materials** (35.6%), innovative and engaging tools and platforms (19.5%), increased engagement and motivation by students (18.5%) and helping learners develop digital skills (18%). As to opportunities/ advantages related to the use of digital technologies for education **outside the classroom** (e.g. for homework) it goes from **flexibility, learning/teaching at one's own pace** (30.7%) to the **increased engagement and motivation by students** (21.5%) and **helping learners develop digital skills** (21.5%), followed by **innovative and engaging learning materials** (21%), time effectiveness (20.5%) and new ways to assess learning and get feedback (19.5%).

From the interviews, when asked what is **the added value of digital education** and what are the main opportunities and advantages, both for lessons in the classroom and homework, we concluded:

The added value of digital education has been found in strategic goals since 2017 but only now we have managed to see it.

The commitment of teachers to find internal and external resources to support the teaching-learning process was very good.

We have discovered all kinds of platforms that we will continue to use. Uploading homework online for students has become so normal, there is no time pressure. Students are more interested in doing homework using digital competences and they have increased their involvement. Plus, we can always keep in touch with our students.

Advantages of digital education for the vulnerable students, after the interviews:

- the group of commuting students (50% come from the villages summing up to 10,000 inhabitants) no longer had to commute and waste a lot of time in trafic

- the group of children with parents who went abroad who already had computers besides using Facebook they learned to use other platforms: Teams, Zoom, Meet

- sending online to students but also to their parents the results of their progress

- digital education helps introverted students participate in class by being behind the camera and feeling safer

- much more accessibility for learners who have different physical disabilities

Digitization is not up to us, we will have to go in this direction whether we want to or not. The fact that students have real-time information resources is a great advantage for doing homework. Thus, time is compressed and they have spare time for other

activities. They can choose from various answers, compare information and select what they want.

A very important added value is the peer support among teachers, the fact that they do not have to offer lessons alone. We have an entire network of teachers and experts and you can invite another teacher or expert from your country or another country to help you.

The value brought by digital education is obvious: it is about being able to find the information you need; access to the Internet, even electricity. You can have education regardless of your location. You can learn from anywhere by connecting your tablet or your phone.

Relations between digital technologies and teaching; risks and new opportunities – Portugal

The report of the webinar "Digitalisation today: Benefits and risks for teaching and learning" (OECD, 2020)[74] revealed a clear preference for face-to-face teacher-student interaction; observed that emergency remote instruction provided what many students viewed as an incomplete and insufficient learning experience and difficulty obtaining sufficient internet access, a suitable study space and adequate course materials.

The "Cybersecurity Literacy and Education Index" study, by consultant Oliver Wymanque, analyzed 49 countries and revealed that the Portuguese "still have little awareness of cyber risks and are not very proactive in their reduction" (Agência Lusa, 2020)[75].

Nevertheless, in general, teachers participating in the survey seemed to have a positive attitude towards digital technologies in education, agreeing that **digital tools make a positive difference on learning** (90% agree or strongly agree), that they **make learning more interesting** (87% agree or strongly agree), **teaching easier** (86% agree or strongly agree), that they **provide learning opportunities outside the classroom** (94% agree or strongly agree) and **enhance learning inside the classroom** (92% agree or strongly agree), as well as agreeing that digital tools **encourage students to collaborate even when not together** (86% agree or strongly agree).

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[74] OECD. (2020). *Digitalisation today: Benefits and risks for teaching and learning - Digitalisation Webinar One,* 29 October 2020.. https://www.oecd.org/education/higher-education-policy/Digitalisation-today-webinar-key-messages.pdf

[75] Agência Lusa. (2020). *Portugal mid-table in population cybersecurity literacy. Observador.* https://observador.pt/2020/11/05/portugal-a-meio-da-tabela-na-literacia-da-populacao-em-materia-de-ciberseguranca/

Some risks and **challenges** were identified with regards to integrating digital education inside the school, with the most frequently selected ones for Portugal being the **need of suitable and up-to-date equipment** (48.5%), **insufficient digital competences among teachers** (30.7%) and **less inclusion of vulnerable students** (28.7%). Furthermore, in the case of distance education, also the challenges identified in chapter 1 should be taken into account.

Another challenge is the work time that is needed to implement new strategies:

"(…) The excessive work that teachers have in administrative tasks does not always allows them to innovate didactically and digitally" (Filipe Santos)

With regards to **opportunities**/advantages related to the use of digital technologies for education, these are again separately investigated in the research. In the case of using such technologies **in the classroom**, it was stated that it would provide **increased engagement and motivation by students** (42.6%) as well as **innovative and engaging ways of teaching/learning** (36.6%) and **innovative and engaging learning materials (30.7%).** As to opportunities/advantages related to the use of digital technologies for education **outside the classroom** (e.g. for homework) it goes from **flexibility, learning/teaching at one's own pace** (44.6%) to the **increased engagement and motivation by students** (26.7%) and **helping learners develop digital skills** (20.8%).

The biggest opportunity is to continue to use digital education regardless COVID-19 pandemics, taking advantage of this "forced" digital transition.

"What remains, and what is being streamlined, is the training of teachers. [In Agrupamento de Escolas da Pontinha], each cluster had to create its own digital development plan. Each disciplinary area has its person responsible for developing the debate. This will greatly help us to have the application of the digital as a resource and pedagogical practice." (Jorge Nunes)

Blended-learning can be an opportunity for the future:

"Regarding the acquired skills, I think that platforms should continue to be used, that is, online teaching should not be abandoned completely, but not for classes. In other words, we can now do

b-learning in classes and take advantage of these platforms for more creative strategies, to reach students in other ways" (Luísa Paixão)

Chapter 6

DEVELOPMENT OF EFFECTIVE DIGITAL LEARNING ENVIRONMENTS FOR VULNERABLE STUDENTS

Overview

The importance of developing of effective digital environments for vulnerable students emerged also indirectly during the exploration of the necessary digital skills of teachers, as the related skills category "using digital technologies to enhance inclusion, personalization and learner's active engagement" proved to be the most popular. The use of ICT in education can contribute to improving accessibility and expanding educational opportunities[76].

Digital education and vulnerable students' inclusion

When asked in the BET! Survey how digital education could help **increase inclusion of vulnerable students**, teachers mostly referred to the opportunity for **personalization** (differentiated teaching), to the utilization of different **types of students' intelligence** via digital education, to the creation of opportunities for more **introvert students** to participate more actively and to the possibility for students to work on their **own pace**. A special reference was also made on the opportunity created by digital education to use text and **multimedia resources** to increase the inclusion of students who don't speak the language well.

Likewise, when asked how digital education would **cause less inclusion of vulnerable students**, many teachers focused on the lack of **resources** (devices, internet, digital platforms, etc), the lack of adequate **support at home**, the lack of **digital skills** (of students and teachers). Some of them also focused on **relationship building** between student and teacher, which they believed that can be hindered using digital means.

Finally, complementary to the above, specifically for distance education settings, the first chapter of this report can once again, give us specific input on the challenges that vulnerable students might face.

[76] Haddad, W. D. & Drexler A. (2002). "The Dynamics of Technologies in Education", in Haddad, W. D. & Drexler A. (eds) *Technologies for education: potentials, parameters, and prospects.* Washington DC: Academy for Educational Development. UNESCO Paris, p.9

Development of effective digital learning environments for vulnerable students - Italy

As reported previously, the importance of developing effective digital environments for vulnerable students emerged indirectly when exploring which digital skills were necessary for teachers. The category “using digital technologies to enhance inclusion, personalization and learner’s active engagement” proved to be the most popular.

Despite this conviction, the Italian Education system was also largely unprepared regarding this aspect during the Covid Emergency. In fact, half of the BET! survey respondents declared that vulnerable students’ inclusion in distance education was tackled only partially in terms of effectiveness. It emerged that, beside the infrastructural difficulties faced by vulnerable families in supporting students (poor or unstable connection, lack of devices, etc.) there were also difficulties in dealing with students with vulnerabilities from a pedagogical point of view. The teachers participating in the survey are aware of the importance of the use of digital technologies to enhance inclusion, personalization and learners’ active engagement and 51% of the respondents believe that this is the most important competence to develop.

Likewise teachers recognize that, regarding vulnerable students, the use of digital teaching can paradoxically imply risks of exclusion where, for example, there is less access to digital devices, students lack autonomy and/or support at home.

Furthermore, 33% of teachers state that one of the main risks regarding integrating digital education in schools is low inclusion of vulnerable students and only the 8% of the interviewees perceived that digital technologies in learning could be an opportunity to increase inclusion of vulnerable students. In fact, many teachers focused their attention on the relationship with vulnerable students, identifying the digital medium as an obstacle between students and teachers’ communication.

The fragility (of vulnerable students) could expose them to a further closure - Teacher from Tuscany, in a non-urban area, Literature, grammar, Civic education, 11-15 years of experience, F, 41

Being in class (vulnerable students) can be involved frequently, on the other hand with digital tools they could feel a lack of involvement. - Teacher from Tuscany, in a non-urban area, Mathematics, Sciences (physics, biology, chemistry), More than 20 years of experience, F, 56

The Covid emergency evidenced a lack of preparation in terms of schools dealing with vulnerable students in digital environments resulting from both the insufficient digital competences of most of teachers as well as for the failure of planning inclusive teaching between subject teachers and special needs teachers which should aim at fully integrating pupils with vulnerabilities[77].

On an institutional level, as mentioned in chapter 1, in order to overcome the difficulties experienced during the first critical pandemic phase, all schools during the second lockdown (year 2020-2021), invited students with disabilities and vulnerabilities to attend schools physically.

In order to guarantee inclusive digital teaching, teachers should acquire new integrated digital teaching skills from an inclusive perspective; knowledge of new teaching methods, aimed at promoting greater inclusion of students with certified disabilities; restructuring evaluation methods as well as constructing and managing new learning environments through Information and Communication Technologies (ICT) and Advanced Technologies (AT)[78].

[77] Mulè, P. (2020). *The Application of Distance Learning (DAD) during the Covid-19 Emergency for Students with certified Disabilities. An Exploratory Investigation.* https://ojs.pensamultimedia.it/index.php/sird/article/view/4371/3875

[78] idem

Digital learning could be a great opportunity for the inclusion of vulnerable students, as demonstrated thanks to experiences of Immersive Virtual Reality (Immersive Vs) which provided unexpected results.

In a new virtual reality context a pupil with difficulties could, for example, find new modalities of expression which cannot or do not occur in the “real” world (Andrea Benassi - Researcher INDIRE)

Development of effective digital learning environments for vulnerable students – Greece

When asked how digital education could help increase inclusion of vulnerable students, teachers in Greece mention **personalization** and **differentiated teaching** (creating repositories of school projects and exercises based on the principles of differentiated teaching/ personalized learning/ personalized learning program and time). The issue of **time** also comes up in the responses of other teachers, who mention that digital education could help increase inclusion through asynchronous teaching and flexible time of implementation. Other answers given by the teachers participating is in our research is giving vulnerable students the opportunity for bigger **participation** and giving introverted students the opportunity to show their skills. Through the **presentation of elements of their culture**, was another answer given. Other teachers mention some characteristics of digital tools (by creating **free, flexible digital tools**/ with the provision of the **appropriate** tools) while some specific examples are also given (**educational games** and **digital collaborative projects**/ multimedia audio-visual texts helped a lot as well as the interactive exercises with self-assessment).

Likewise, when asked how digital education would cause less inclusion of vulnerable students, teachers refer to the **lack of equipment** (also proposing as possible solutions the free provision of equipment, the use of equipment through the Municipality or through the school), lack of **connectivity**, lack of **digital skills** and lack of **accessibility** (highlighting that the real practical needs of each family should be taken into account so that the child can have access). It is also mentioned that this is already happening, caused by the lack of equipment and **support**. Also that it is the responsibility of the state to create the conditions so that all students participate, giving as an example the need for **fewer students per class**. A special mention was also made on children living in structures, institutions, children's villages and degraded societies that can not participate due to lack of infrastructure, insufficient **language skills**, lack of care and support and therefore do not progress at the same time as other children and thus the gap in social inequality is growing more.

Finally, specifically for distance education settings, the first chapter of this report can once again, gives us specific input on the challenges that vulnerable students might face.

Development of effective digital learning environments for vulnerable students – Romania

When asked how digital education could help increase inclusion of vulnerable students, **teachers responded:**

"The school was actively involved in identifying all children with various financial problems that would have prevented a good collaboration with children.

The school was concerned with purchasing digital tools for students from vulnerable families.

Solutions were developed and devices (smartphones, tablets, laptops) were distributed to students who did not have such devices at home.

The principal and teachers were largely involved in the case of students with problems. In cases where there were various problems, it was possible to communicate through the WhatsApp application.

These students were provided with the necessary tools and cards with internet access. There was flexibility and understanding.

All students were contacted by the teachers, then with the help of the computer scientist and the support of the department, it was reached to solve, in a way, all the problems so that the classes could be held and the subjects taught.

The school initiated the creation of a domain on Google Classroom and the generation of user and password for each student, teacher, so that we have an increased security of online classes.

I appealed to the parents' community, and those who had more devices donated to those who did not. Then, for those left without devices, the school bought a lot of tablets and one of the laptops that it offered on loan.

A student who was in a placement center passed the exam.

Various questionnaires were applied to identify the various problems encountered by students and solutions were sought."

Likewise, when asked how digital education would cause less inclusion of **vulnerable students:**

"Efforts have been made to provide Internet-connected devices to students from disadvantaged backgrounds. At the same time, the participation of teachers in training courses in the field was financially supported.

The teachers went to the students' homes to familiarize them with the work on the digital platforms.

Yes, efforts have been made by all. Students were supported by teachers and parents to have equal opportunities in education and for education to continue.

It was necessary to create worksheets for students who could not connect, but they did not reach everyone or did not return them for feedback.

The quarantine of the locality and the lack of parental involvement are the main causes that led to the lack of involvement of some students.

Poor communication between parents and school.

I do not understand distance education at primary and secondary level.

Family involvement was repeatedly attempted, and the student was offered a tablet connected to the Internet, but his motivation to attend classes was low.

Vulnerable students were promoted, thinking that they did not have the opportunity to participate in online classes! The authorities did nothing for them!

The very short time we had to readjust.

The school did not benefit from devices with a stable internet connection that could be used by vulnerable children. Although everything is fine on paper, the reality is different.

Teachers did not know how to handle these cases.

Impossibility to support vulnerable students with means.

There were students who had a room at home, together with older / younger siblings.

They were not involved, they were not included in special sessions adapted to their needs.

Many of the causes of students' low access to online learning were objective and were due to the areas where they live and the fact that they did not initially have digital devices / tools; subsequently, the school tried to provide such tools to disadvantaged children, but the needs were not met.

Digital tools have reached students late.

These students manifested themselves differently due to the fact that they were in their environment, which gives them security and self-control.

Carrying out the online activities required more training time for the teacher, to the detriment of personalizing the activities carried out with the students. It was not possible to achieve an effective control over the learning / evaluation activity of each student.

The school and teachers have made efforts to ensure the access of students from vulnerable backgrounds to online education by providing free tablets with internet cards that were handed personally, at home, to students. However, not everyone entered the online lessons.

Some of the high school students did not have devices, did not have internet, did not enter different platforms to upload their homework or watch the lesson taught, worksheet, video, movie. The school, the town hall, did not offer all children the opportunity to work online.

Their interest was reduced and quickly lost. The parents were not involved either. It is also important to support the family in such situations.

Despite the school's approach, disadvantaged students did not show interest in online schooling.

The class did not take place with the students with CES, but separately.

Vulnerable students either did not attend many of the lessons or had no control over their participation because they were with their cameras turned off and not answering questions.

The students received devices, but without physical help, individualization was still not enough for some of them. This was due to their lack of skills in using the devices.

Students who are not directly motivated to learn did not show interest online either.

Not all students are expected to be involved in these classes.

The children received the lessons in letter format, but the teachers did not have the necessary feedback to check what was fixed correctly and what was not.

Vulnerable students received the tablets a month and a half later after going online."

Finally, specifically for distance education settings, the first chapter of this report can once again give us specific input on the challenges that vulnerable students might face.

From the interviews, when asked about examples of **good practices in the use of digital education** to enhance inclusion, personalisation and learners' active engagement or focus on good practices at institutional level or good practices related to methodologies and teaching approaches and tools adopted, the experts concluded:

In Ilfov County, at some meetings, we were presented with the project Clasa Viitorului, which involved equipping classes with small digital equipment, working on Google Classroom. It was the mayor's finance. Everything took place on tablets. Digital lessons were taught with digital textbooks. All teachers were involved in this project before the pandemic.

Immediately after starting the online school I did a technological audit. Each teacher talked to the student's family and talked about what they needed. There were children who had extra devices but I also had parents who did not want to keep their children online at school. We offered them Internet connection and equipment. The mayor's office, through the social assistance service, offered them materials, food, and clothes. The children helped each other with online learning and equipment exchange. They sat next to each other to learn to use the tablets at school.

Some concrete examples: all the knowledge from Google is translated in Romanian. Also what Microsoft does is very useful. At national level TechSoup Association created platforms for education: indreptardigital.ro, predauviitor.ro. Teach for Romania has an academy for teachers to teach online. Save the Children Romania has a project where they help the parents to learn how to set up their devices for online education. Narada Association has some good programs for teachers. Scoaladinvaliza is a programme sustained by a private company from Romania – is a trolley with 30 tablets and a laptop with Internet connection that goes in schools for online classes, especially in remote rural schools.

When asked if **digital education can be a means to reduce inequalities among students** and what conditions must be met in order to do so, including practices at at institutional level, they answered:

In some contexts it could reduce inequalities between students. But in some rural areas electricity is needed. We give them tablets but they do not have electricity. Support is needed from the authorities to solve such problems.

Clothing is no longer compared online, parents no longer have to make packages for school with food, and they no longer need transport money, a backpack or pocket money. Even in the area of education, access to information is better because it can determine them to be more involved by having a perspective beyond the space in which they live. They don't have many models and then in the online environment they can find information to help them have other perspectives. There are students who do not go to the mountains, the sea, the mall or other cities. So online education became their new world.

We need to continue to support students and their families, so they can all develop basic digital skills, and also some good hearted role models among students to support their colleagues in need.

There are reduced inequalities related to their social status especially, when they are online. The Ministry of Education tried to offer tablets to all students and is still work in progress. Because we need to learn chemistry and physics we can use digital labs for that and this way the gap between schools that have an actual lab and schools that do not have one is closed.

All the digital tools are evolving to mobile phones and it’s a good idea to have this practice to have in schools these digital labs for example. You can go outside and use your phone to teach or learn in a class.

When asked about **good practices in the use of digital education for vulnerable students at institutional level** the situation was:

The Merito project in the summer of 2020 supported the students from a completely disadvantaged environment and teachers to develop digital skills.

The Association for Values in Education has trained a number of teachers in digital skills.The CRED course was the first of its kind. Until the pandemic, no one opened an online meet.

Unfortunately, I do not have so many good practice examples related to vulnerable students. I know some but I cannot recommend them as good practice. A colleague of mine teaches at schools for deaf and hard of hearing students and they had many

challenges to teach using Zoom for example. They did not receive any institutional help or support.

To create lessons with access for all disabilities is very complicated. You have to create a material adapted for each type of vulnerability. If you make an online public training you must make sure it is accessible for all types of students. This needs a lot of skills to create content accessible for all, including blind, deaf or other types of students with vulnerabilities. Again there was no support from public institutions.

Development of effective digital learning environments for vulnerable students – Portugal

"For example, since I work with the [Google] Classroom, I can much more easily create differentiated tasks for students within the same class and give feedback. Before I used to take a paper worksheet, gave it to those students which I felt were having more difficulties, but then didn't have time to give feedback." (Isabel Catarino)

The importance of developing effective digital environments for vulnerable students emerged also indirectly during the exploration of the necessary digital skills of teachers, as the related skills category "using digital technologies to enhance inclusion, personalization and learner's active engagement" proved to be the most popular.

According to the report "Vulnerable People & ICT in Portugal" carried out by the Foundation for Science and Technology (2013)[79], Portugal has the three main television operators providing accessibility solutions mostly for deaf and blind people. In 2009, this area became regulated by the Government. One of the national channels, RTP, broadcasted some classes (#EstudoEmCasa) during the pandemic, ensuring the translation to sign language.

According to the same report, there are programmes "whose mission is to strengthen social cohesion by promoting the social inclusion of children and young people with low socioeconomic status, empowering them with skills that will allow them to strive for equal opportunities" (Foundation for Science and Technology, 2013, p. 11), for example the "Choices Programme" (Programa Escolhas). All of the local projects of this Program have a Digital Inclusion Center, that includes ICT Training, ICT courses, promotion of ICT competences and skills, informal activities of ICT exploration, homework and job

[79] Foundation for Science and Technology. (2013*). Vulnerable People & ICT in Portugal: the practice of more than 15 years.* Ministry of Higher Education and Science, IP. https://www.fct.pt/dsi/docs/fct_vulnerablepeople_ict.pdf

searching, search for information and free leisure use. "In 2012, 89 of these local projects were involved in online safety activities, developing more than 200 activities that covered 5300 people in situations of info-exclusion and vulnerability".[80]

When asked how digital education could help increase inclusion of vulnerable students, teachers responded by referring to the access to these tools to all students and tailored to their needs and requirements, bringing students closer and breaking down barriers. Also, developing and gaining skills that they do not have the opportunity to learn if not in the school environment, increasing the self-esteem and mentality growth of these children, also with the involvement of students in the processes for their essential learning. Another mentioned advantage, is the fact that students are not as exposed, they work at their own pace, echo their work, share their products/materials, collaborate with colleagues and are already familiarized with the technology and use of mobile phones, developing their autonomy and bringing students closer to the contents/school, this is motivating for them.

> "When a student is bedridden in the hospital, it is very easy to put him in school again because we already have these softwares like teams and zoom. For example, a young person who is in prison or is conditioned to move can also study, and therefore we are talking here about e-learning specifically as a combatant of some vulnerabilities. When you [referring to the interviewer] talked about refugees, there could be a question more linked to language, culture, that perhaps technology could be used, such as Google translate, a very simple and still imperfect tool, but also very good to bridge the gap language barrier." (Filipe Santos)

Likewise, in the questionnaire, when asked how digital education would cause less inclusion of vulnerable students, teachers added the lack of necessary resources to access what is needed in digital education (computer, internet, digital platforms, etc) as well as the lack of support and family resources, or the necessary skill in using digital tools.

On the one hand, the most vulnerable students need more individualized human support; on the other hand, educators/teachers need specific quality training in the area of digital education to be able to support the most vulnerable students.

Another point was the increase in ICT classes and individual school support.

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[80] *ibidem* (2013, p. 12).

According to one of the interviews, digital allows teachers to respond to different types of intelligence - some students are more visual, others more musical, etc. Many times students don't succeed because contents are not adapted to their needs and personal characteristics, and the digital facilitates this adaptation.

It is important to tailor teaching practices to the conditions and characteristics of each student:

> "It's about adapting teaching practices to the conditions of each student, therefore, we have to know what kind of student we have in front of us, know what conditions they have, what family context they have, what conditions they live in, what capabilities and what the limitations of these same students as well. Therefore, this is the only way we can adapt the practices to the needs and conditions of each one of them." (Alexandra Rodrigues)

The ability to readapt is essential:

> "Regarding personalization and inclusion issues, this attitude of realizing that technology, being highly configurable, allows me to re-adapt a map I made for one student to another with different needs and, therefore, there may be techniques for the student to feel that education has been personalized for him. But, for now, it is still difficult ..." (Filipe Santos)

Finally, specifically for distance education settings, the first chapter of this report can, once again, give us specific input on the challenges that vulnerable students might face.

Chapter 7

EXAMPLES AND GOOD PRACTICES

In the 7th chapter of this report examples and good practices of digital tools/ materials and cutting-edge pedagogies for the digital environment will be presented. This chapter contais the good pactices included in the BET National, that have derived either from the experience of partners, or from the desk research, from the BET in-depth interviews or in some cases from the experience of the educators taking part in the BET online survey, as well as good practices on a EU level.

Digital tools

Title of good practice	**At school with Minecraft**
Good practice category	**Digital Tools**
Keywords	Game learning – Pedagogical technologies – immersive Didactic - Collaboration - problem-solving
Who was involved?	300 Italian classes
Where was it implemented?	Italy
Why was it implemented?	Indire's (the National Institute for Documentation, Innovation and Educational Research, Italian Ministry of Education's research organisation) experimentation has shown that the educational use of Minecraft can enhance school learning in mathematics, in STEM disciplines, but also in history and civics.
Description	*Minecraft* is the most popular video game of all times, it is a video game originally developed and edited by Mojang in 2011. It is about a virtual world where it is possible to do things that could have a meaning also for school, not only from a ludic point of view. The trial of Minecraft use at school involved 300 it is reported in the publication "A scuola con Minecraft – Progettare la scuola a cubetti" that illustrate the game dynamics and analyze the educative potential, driving teacher in the materials and contents creation in line with school curricula in order to introduce this tool efficiently inside the classroom. Furthermore, in the publication are included several *best practices* that show how **Minecraft can be used in several disciplines**, and in an

	even more interesting and fruitful way, in an interdisciplinary perspective that enhance an approach based on skills. Immersive didactic has also proved as an effective support in the inclusion of vulnerable students unlocking hidden potential in these pupils.
Link	https://www.youtube.com/embed/I50_9tr6Cp8

Title of good practice	**Virtual Reality Videos in Education** - Walk the Global Walk virtual reality educational video
Good practice category	**Digital Tools**
Keywords	VR, education, SDGs, climate change
Who was involved?	The VR video was created by ActionAid Hellas in the framework of the Walk the Global Walk project. For its creation ActionAid Hellas collaborated with Noesis. Walk the Global Walk partners include: Oxfam Italia, Regione Tuscany, ActionAid Hellas, Municipality of Fyli, Agenda 21, AIDGLOBAL, City of Mostar, Municipality of Sofia, Region of Istria, Municipality of Strovolos, Cardet, Normandy Regional Council, International Institute for Human Rights and Peace, Municipality of Vila Franca De Xira, Municipality of Bucharest, University of Glasgow, Carmarthenshire County Council, Dolen Cymru The VR is targeted to children over 11 years.
Where was it implemented?	Online
Why was it implemented?	The VR video was created as an educational resource, as an awareness raising tool and as prompt for action. Self-explanatory and free to use this video can also become a valuable resource for the sustainability of the Walk the Global Walk project outputs.

	Already used by the UN to **inspire humanitarian empathy**[81] VR is the use of computer technology to create a three dimensional simulated environment. As stated by Gabo Arora, Creative Director and Special Adviser to the United Nations Sustainable Development Goals (SDG) Action Campaign "Virtual reality is the ability to really take part in a story that usually you're only a passive spectator on. And it's giving you the possibility to walk in another person's shoes"[5]. In the VR video of Walk the Global Walk, that combines real life elements and animations, students can explore a world the SDGs have been achieved. Hints of the process that has led to this achievement are still visible, like placards with the demands of the citizens. At the end of the video, the protagonist realizes that it was just a dream. But she now knows what should be done and starts spreading the message. The use of virtual reality in education encompasses many benefits. First, it creates interest and increases **student' engagement**. It also allows for **visual learning** through the visualization of educational content, providing outstanding visualizations that aren't possible in the traditional classroom. Furthermore, it facilitates **active learning** from experiences while the experiential nature of VR supports a constructivist approach to learning. The VR video can thus be used as the initial stimulus for starting an **exploratory learning** process on the topics addressed in the video. Additionally, utilizing images and non-linguistic means of communication, VR videos can contribute to eliminating **language barriers**. These benefits can be effectively exploited to create an inclusive learning environment and to address topics related to Global Citizenship Education.

[81] https://news.un.org/en/story/2016/05/529752-feature-un-uses-virtual-reality-inspire-humanitarian-empathy

	Of course, there are also some challenges in the utilization of VR in education, with the basic one being the cost included in doing so. Progress is being made though on that issue, as progressively cheaper equipment is being created. The Walk the Global Walk video is also free to use. Furthermore, the video can be used even without the existence of VR equipment.
Link	https://www.youtube.com/watch?v=6EbfoNfT3Os

Title of good practice	**Serious Games in Education** - Youth for Love Serious Game on Gender Based Violence and Bullying
Good practice category	**Digital Tools**
Keywords	Serious game, gender based violence, bullying
Who was involved?	The serious game was created in the framework of Youth for Love project. Youth for Love partners include: ActionAid Hellas, ActionAid Italy, AFOL Metropolitana, University College Luimburg, Centrul Parteneriat pentru Egalitate The game is targeted to teenagers over 15 years.
Where was it implemented?	Online
Why was it implemented?	The online game was created as a tool to raise awareness amongst teenagers on issues such as gender-based violence, bullying and violence in general.
Description	Available in five languages (Greek, English, Italian, Dutch and Romanian) the game is aimed at those who want to learn the power of their own choices in cases of violence and intimidation and the importance of making the right decisions. Players can choose a character that inspires them, tour through the city and choose where they want to start. From there, their story

	begins, as depending on the choices they make, the story will unfold differently for the character.
Link	https://www.youthforlove.eu/el/pregame/

Title of good practice	**Video Making in Education** - MigratEd Participatory Videos on GCE issues and Webdocumentary
Good practice category	**Digital Tools**
Keywords	Participatory video, interculturality, diversity, migration
Who was involved?	The participatory videos and web documentary were created in the framework of MigratED project, cofounded by the Erasmus+ Programme of the European Union. MigratED partners include: ActionAid, Karpos, GVC, Municipality of Bologna, CSAPSA2, SLOGA, 4Change, COFAC, και Future Worlds Center.
Where was it implemented?	In schools in the 5 countries of the project and online
Why was it implemented?	To empower students and stimulate their critical thinking on both the use of media and the social problems of their local contexts.
Description	The Media literacy workshops addressed to youngsters in each country, and especially engaging class and groups composed by national and foreign young people, in order to promote intercultural dialogue. The need is to raising awareness and educate about a correct use of media and digital tools, starting from the participants' interests and habits and deepening some GCE issues. These workshops are the first step for the production of participatory research and video production; on the other hand, they are the starting point for the organization of public events in which the young participants themselves are the key players of

	an awareness raising campaign on the issues of media, human rights and migration. Following the workshops, in each country, different focus groups of young people are created in order to produce participatory videos on the GCE issues (interculturality, diversity, migrations, human rights…) collectively. These videos, as well as the participatory researches conducted by youngsters, were based on the real life experience of youth, and aim to create a collaborative process of production of audio-visual materials, empowering them and stimulating their critical thinking on both the use of media and the social problems of their local contexts.
Link	http://migratedvideos.eu/

Digital platforms/resources/trainings

Title of good practice	Online methodological guides for education
Good practice category	**Digital Platform/Resources**
Keywords	methodology, teacher, skills, digital, guide
Who was involved?	teachers, students from all school types, schools, Ministry of Education,
Where was it implemented?	in schools, online - **Romania**
Why was it implemented?	To develop the skills of teachers to use and develop open educational resources (RED), expecting that over time this space will support learning communities dedicated to open educational resources.
Description	Shortly after the suspension of school classes, this space was created for all teachers eager to capitalize on new technologies in learning activities with students, building on the experience and results obtained so far in the CRED project (site and Facebook

	page). Subsequently, out of the desire to cover as many of the teachers' needs as possible, we chose to make available resources from sources outside the CRED Project.
Link	https://digital.educred.ro/

Title of good practice	The Digital Teacher
Good practice category	**Digital Platform/Training**
Keywords	oonline, teaching, materials, transversal, competences
Who was involved?	Target group: teachers. Implementers: Finnish Teacher Training Center. Our team of trainers includes young specialists who work in technology companies such as: Microsoft, Google, UiPath or Orange, but who are also certified trainers with practical experience in adult training.
Where was it implemented?	Online - **Romania**
Why was it implemented?	To provide teachers with practical resources using today's technology (tutorials, free resources, online courses, books and more).
Description	Why attend the courses in the Digital Teacher Amphitheater? You learn from experienced trainers who understand current challenges and help you cope with change, to use technology effectively. You have access to courses immediately and you can learn at your own pace: wherever you are, whenever you have time and from any type of device: computer, tablet or mobile phone. Initiate conversations at the level of each lesson or participate in existing discussions. Be part of the community! Together we can do more and better.

Link	https://profesoruldigital.ro

Title of good practice	**School Education Gateway** - Europe's Online Platform for School Education
Good practice category	**Digital Platform/ Resources/Training**
Keywords	Online platform, resources, training, funding opportunities
Who was involved? Type of target group, Implementers, Partners of implementers	The School Education Gateway is targeted to teachers, school leaders, researchers, teacher educators, policymakers and other professionals working in school education – including Early Childhood Education and Care (ECEC) and Vocational Education and Training (VET). It is an initiative of the European Union and it is funded by Erasmus+, the European programme for Education, Training, Youth and Sport. It is steered by the European Commission (EC) and implemented by its European Education and Culture Executive Agency (EACEA). It is operated on behalf of the European Union by European Schoolnet, an international partnership of European Ministries of Education developing learning for schools, teachers and pupils across Europe. The School Education Gateway is linked to eTwinning, the community for schools in Europe.
Where was it implemented?	EU
Why was it implemented?	The place to engage with European policy and practice for school education
Description	The School Education Gateway is an online platform presented in 29 European languages. It offers:

	a. the opportunity to stay informed (via opinion pieces by experts, news articles, interviews, up-to-date publications, and examples of practices); b. the opportunity to find resources (such as publications, tutorials, teaching materials, e-Twinning project kits); c. the opportunity for personal development (via the Teacher Academy that offers online courses, webinars and teaching materials); d. the opportunity to get familiar with funding (through the Erasmus+ Opportunities, consisting of three practical tools - course catalogue, mobility opportunities directory and strategic partnership search).
Link	https://www.schooleducationgateway.eu/

Projects/ Initiatives/ Programmes

Title of good practice	"Conectando Mundos"
Good practice category	**Project**
Keywords	**Critical thinking, interactive platform, Global Citizenship, Global Competence and Interculturality.**
Who was involved?	Target group: Teachers and students between the ages of 6 and 17. Promoter: Oxfam Intermón. Partners: Oxfam Italia, Espais Telemàtics, AIDGLOBAL and IPLeiria. Funders: Erasmus+ (editions from 2019 to 2020) and the partners involved.
Where was it implemented?	Spain, Italy and Portugal.

Why was it implemented?	To contribute to the improvement of the educational quality by providing tools for the work and assessment of Global Competence in schools.
Description	"Conectando Mundos" is an educational proposal, implemented through a multilingual interactive platform in 8 languages (Italian, Spanish, Portuguese, English, French, Galician, Catalan and Basque), through which the different classes interact and work in cooperative and organized teams. This project brings together activities within the classroom and work in a network composed of students from 6 to 17 years old from various cultural, economic and social realities. Every year, a concrete theme related to Global Citizenship Education (GCE) is worked on. The project includes: - Online platform for collaborative work and cultural exchange; - Didactic proposals for the development of Global Competence with children and young people between 6 and 17 years old; - Set of training materials on Global Citizenship Education, for teachers.
Link	https://www.conectandomundos.org/pt/

Title of good practice	Library Project
Good practice category	**Project**
Keywords	Library - Access to culture for all – Service learning
Who was involved?	Teachers and Students of Primary and Secondary school (1st level)
Where was it implemented?	ISTITUTO COMPRENSIVO DI POPPI (Ar) - Tuscany **Italy**

Why was it implemented?	This initiative is still in progress and it aims to create a digital archive of books existing in a few library of the Institute in order to educate pupils to coding, to stimulate them to read, to create a library environment open not only to the school users (teachers, staff and students) but also to external user and eventually thanks to this project schools entered in a system of digital school library.
Description	Thanks to available resources following the Covid emergency, a software for books cataloguing already existing in the school library has been acquired, useful also to share the information of books loan with other libraries. In addition has been acquired has been acquired a digital school library which joins the traditional library with physical books. The library (physical and digital) it therefore available also for externals users. The digital cataloguing of books, in progress, is carried out by teachers and pupils. Thanks to this activity, teachers will learn the use of CODING and skills related to the cataloguing of books will be transferred to the students. At the same time this activity enhances the interest in reading among students, developed during their continuous work with books in the library. This activity is framed in the pedagogical proposal of Service Learning that fosters the use of students' competences in a service useful for the entire community.
Link	https://www.poppiscuola.edu.it/index.php

Title of good practice	Council of Europe's Digital Citizenship Education (DCE) programme
Good practice category	**Programme**
Keywords	Digital citizenship education

Who was involved? Type of target group, Implementers, Partners of implementers	The Digital Citizenship Education (DCE) programme is targeted to the educational community of Europe as well as policy makers. The Project 'Digital Citizenship Education' is related to the work of the Education Department which is part of the Directorate of Democratic Participation within the Directorate General of Democracy ("DGII") of the Council of Europe.
Where was it implemented?	EU
Why was it implemented?	To provide young citizens with innovative opportunities to develop the values, attitudes, skills, and knowledge necessary for every citizen to participate fully and assume their responsibilities in society.
Description	The aim of the DCE project launched by the Council of Europe's Education Policy Division is to empower children to participate actively in digital society. This involves providing them with an education that develops a sense of critical analysis and the effective use of digital technologies while fostering a notion of citizenship based on respect for human rights and democratic culture. The programme defines the competences children will need to master to be competent, responsible digital citizens. It also describes the 10 broad domains of on- and offline activity where they are used. Furthermore, the Digital citizenship education handbook has been developed in the framework of this project. It is intended for teachers and parents, education decision makers and platform providers. It offers information, tools and good practice to support the development of competences to empower and protect children, enabling them to live together as equals in today's culturally diverse democratic societies, both on- and offline.
Link	https://www.coe.int/en/web/digital-citizenship-education/home

	https://rm.coe.int/digital-citizenship-education-handbook/168093586f

Teacher Networks

Title of good practice	**Participation in Teacher** (and other Frontline Practitioners) **Networks** – Radicalisation Awareness Network (RAN)
Good practice category	**Initiative/Frontline Practitioners Networks**
Keywords	frontline practitioners' networks, radicalization
Who was involved?	The Radicalisation Awareness Network (RAN) is set up by the European Commission as an EU-wide umbrella network of frontline practitioners across Europe who work daily with both those vulnerable to radicalisation and those who have already been radicalised. The RAN is funded by the EU Commission's Internal Security Fund - Police
Where was it implemented?	EU
Why was it implemented?	The RAN's ambition is to bring actionable information to the various stakeholders involved in the prevention of radicalisation.
Description	The Radicalisation Awareness Network (RAN) connects frontline practitioners from across Europe with one another, and with academics and policymakers, to exchange knowledge, first-hand experiences and approaches to preventing and countering violent extremism in all its forms. RAN is structured around nine thematic Working Groups, driven by a Steering Committee (SC) chaired by the European Commission. One of these working groups is the Youth and Education working group (RAN Y&E), which focuses on the need to better equip teachers and youth workers to support them in their role in preventing

	radicalisation and on strengthening cooperation between the two sectors.
Link	http://ec.europa.eu/ran https://ec.europa.eu/home-affairs/networks/radicalisation-awareness-network-ran/topics-and-working-groups/youth-and-education-working_en

Title of good practice	**Participation in Teacher Networks** – Scientix community
Good practice category	**Project/Teacher Networks**
Keywords	Teacher networks, STEM
Who was involved? Type of target group, Implementers, Partners of implementers	Scientix was originally born at the initiative of the European Commission and has, since its inception, been coordinated by European Schoolnet, a Brussels-based consortium of thirty ministries of education, which is a driving factor for innovation in teaching and learning and fosters pan-European collaboration of schools and teachers. It is targeted to STEM teachers, education researchers, policymakers and other STEM education professionals. Scientix 4 project has received funding from the European Union's H2020 research and innovation programme.
Where was it implemented?	EU
Why was it implemented?	To promote and support a Europe-wide collaboration among STEM teachers, education researchers, policymakers and other STEM education professionals.
Description	Scientix is a community for teaching and learning science, technology, engineering and mathematics (STEM). Scientix promotes and supports a Europe-wide collaboration among STEM teachers, education researchers, policymakers and other STEM education professionals.

	Scientix offers teachers: a. inspiration (as they can browse through the Scientix resources repository and find inspiration for your classes); b patnerships (as they can get involved in European STEM education projects via the matching tool provided); c. professional development (via online training, webinars or communities of practice) d. Multilingual Resources and e. support (through the Scientix Ambassadors and National Contact Points).
Link	http://www.scientix.eu/

Title of good practice	**Participation in Teacher Networks** - eTwinning
Good practice category	**Initiative/ Teacher Networks**
Keywords	Teacher networks, ICT, innovation, learning
Who was involved?	eTwinning is an initiative of the European Commission targeted towards European school staff. eTwinning is co-funded by the Erasmus+, the European programme for Education, Training, Youth and Sport.
Where was it implemented?	EU
Why was it implemented?	eTwinning aims to encourage schools in Europe to develop partnerships using Information and Communication Technologies while providing them with appropriate infrastructure.
Description	Between 29% of secondary level and 41% of primary level students are taught by teachers that have participated

	in an online community for ICT related professional development[82]. eTwinning is the community for schools in Europe. It offers a platform for staff (teachers, head teachers, librarians, etc.), working in a school in one of the European countries involved, to communicate, collaborate, develop projects, share and, in short, feel and be part of a European learning community. At the time this report was written 999.113 teachers and 226.931 schools were part of the e-Twinning community[83]. It offers opportunities for collaboration, professional development (through learning events and online seminars) and recognition (though through National and European Quality Labels, eTwinning Awards, eTwinning Schools and the eTwinning Portfolio). Furthermore, there is also Twinspace, the virtual collaborative platform, that is designed to include those people who are not registered in the eTwinning platform.
Link	https://www.etwinning.net/

Other good practices

From Greece some good practices in the use of digital education and digital tools for education in general or, specifically, for civic education that came up via the BET online suvey and the interviews were:

- The **flipped classroom** as a pedagogical practice with many benefits. There can be education materials that can be processed by children in their space and time and then go back to school and discuss and get support from the teacher. In the Greek

[82] European Commission (2019). *2nd Survey of Schools: ICT in Education. Technical Report.* Available at: http://dx.doi.org/10.2759/035445
[83] https://www.etwinning.net/

education system the process is completely inverted, we leave the demanding mental work for homework.

- The creation/ existence of **school/ teacher networks** for the exchange of good practices and the importancce of peer learning (with information between teachers in groups in social networks being mentioned as an example of something that helped many teachers)
- **Teacher trainings** organized (giving as examples the seminars on learnig how to use specific platforms, the etwinning seminars, the B-Level seminars, the seminars from the Scientific Association for the Promotion of Educational Innovation E.E.P.E.K., seminars in the schooleducationgateway, and in the europeanschoolnetacademy.eu, ActionAid's seminars and seminars available in platforms such as udemy, coursity, mathesis)
- Creating a **blog** for cooperation and exchange of views, presesenting actions, mobilization and information of the wider society on issues related to the interests of children, their concerns and suggestions.
- The creation of short **films by students** (e.g. the creation of films by students on road safety using digital tools and the creation of short films during the distance education period).
- The use of **robotics** and **STEM** in general for enhancing computational and organizational thinking, and especially for children with special educational needs.
- The implementation of **field visits digitally**, during the remote teaching period (e.g. virtual field trips offered by Harvard and National Geographic)
- The utilization of digital platforms that have **digitized cultural monuments worldwide** (through the National Documentation Center), incorporating them withing the courses.
- The use of **Web 2.0 tools** (e.g. tools the creation of wordclouds).
- **Initiatives/ stakeholders** in the field of Civic Education that also provide online content in the field (e.g. Education for Democratic Citizenship and Human Rights Education programme of the Council of Europe[84] , the School Education Gateway[85] and EURYDICE and its report on Citizenship Education at School in Europe[86]).

[84] https://www.coe.int/en/web/edc

[85] https://www.schooleducationgateway.eu/en/pub/theme_pages/citizenship.htm

[86] https://eacea.ec.europa.eu/national-policies/eurydice/content/citizenship-education-school-europe-%E2%80%93-2017_en

- Platforms and applications by the Institute of Educational Policy in collaboration with other stakeholders (like the **augmented reality application** for teaching mathematics and natural sciences to children who do not know any Greek and a platform with the educational material for Gymnasium in 8 arabic languages that are being developed).
- As a more horizontal note also **innovative didactic-methodological practices** in the teaching of subjects included in the official curriculum and in extracurricular education, **innovations in school operation and school life** and **intercultural pedagogical practices in teaching** were mentioned.

Other good practices were shared by the interviewed in Portugal: one in the field of **interdisciplinarity**:

"Since I work more in the field of robotics, computational thoughts, children's programming, etc., I would highlight here the Escola de São Gonçalo, in Torres Vedras, that has a robotics club which is the best robotics club in the country, if we consider the international competitions that they go to and usually win. It's a bit this idea of reusing school clubs, where education is much more informal than in the classroom. And here, to answer the question of active involvement, it is also a space where the subjects are worked on in an integrated way." (Filipe Santos).

....and another connected to the **welfare of the school community**:

"It is important to address the issue of impact, including the neediest students. [During the confinement, the Agrupamento de Escolas da Pontinha] created an SOS line, which had our psychologists and social worker as receivers of problems, which served to follow up on cases of some problems, even psychological, but also to try to understand how things were going with students. (...) Many situations were denounced (such as abuses), like other situations in which people needed to unburden – even the teachers and other employees had access to the SOS line.". (Jorge Nunes)

Concerning the **inclusion of migrant students**, digital tools were also considered an asset:

"We have the issue of students whose mother tongue is not Portuguese, and therefore we have managed, through digital tools, in terms of automatic translation. We applied for a fund (National Fund for Migration and Integration) (...) and purchased software to provide automatic translation and develop some activities for learning Portuguese as a non-native language." (Jorge Nunes)

In two interviews it was also mentioned the trend of introducing technologies into the classroom - BYOD - "Bring your own device" -, in which children bring their own cell phones to school.

Although is not accessible to all students since it has profit purposes, the Portuguese study platform "Escola Virtual" (Virtual School), provided by editors, is being adopted in

many schools due to its audiovisual resources and gamified strategies that are appealing to students. Through “Escola Virtual”, teachers have at their disposal a pedagogical tool that can be used to support their individual work of preparing classes, carrying out exercises and assessments or in a collaborative component, creating classes, sharing materials and sending tasks.

Chapter 8

POLICIES IN THE FIELD

Overview

In this final chapter we will look into the policies for inclusive education, digital education, and civic education. The aim of this chapter is not to provide an extensive listing of the related legislative framework and the policies, but to contribute to our understanding of the operating framework, in order to help us shed more light on our research findings and draw our conclusions.

Inclusive education

According to the Article 2 of the Treaty on European Union[87] "the European Union is based on the common values and general principles of respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights, including the rights of persons belonging to minorities". Furthermore, in the "Declaration on promoting citizenship and the common values of freedom, tolerance and non-discrimination through education[88]", that was adapted by the informal meeting of EU Education Ministers in Paris on 17 March 2015, it was agreed to strengthen their actions in the field of education with a view , amongst others, to "ensuring inclusive education for all children and young people" and to "combating geographical, social and educational inequalities, as well as other factors which can lead to despair and create a fertile ground for extremism, by providing all children and young people with the necessary knowledge, skills and competences to build their own professional futures and pathways to success in society, and by encouraging measures to reduce early school leaving and to improve the social and professional integration of all young people".

[87] Consolidated version of the Treaty on European Union - TITLE I COMMON PROVISIONS - Article 2 *OJ C 236, 7.8.2012, p. 17–17* ELI: http://data.europa.eu/eli/treaty/teu_2012/art_2/oj

[88] https://ec.europa.eu/assets/eac/education/news/2015/documents/citizenship-education-declaration_en.pdf

In line with this, European Council has issued a recommendation on promoting common values, inclusive education, and the European dimension of teaching[89], according to which the member states shall, among others: increase the sharing of the common values mentioned in Article 2 the Treaty on European Union from an early age and at all levels and types of education and training; to promote inclusive education for all learners by: "(a) including all learners in quality education from early childhood and throughout life; (b) providing the necessary support to all learners according to their particular needs, including those from disadvantaged socioeconomic backgrounds, those from a migrant background, those with special needs and the most talented learners; (c) facilitating the transition between various educational pathways and levels and enabling the provision of adequate educational and career guidance.

In the direction of achieving more inclusive educational systems, Italy, Greece and Portugal are also member countries of the European Agency for Special Needs and Inclusive Education[90]. The aim of this agency is to support the ministries of education of its member countries as they improve their inclusive education policy and practice and to also co-operate with transnational organisations and engage educators, experts, learners and families to ensure high-quality educational opportunities for all.

Digital education

The Digital Education Action Plan (2021-2027)[91] is a policy initiative of the European Union to support the sustainable and effective adaptation of the education and training systems of EU Member States to the digital age.

This action plan sets out two priority areas: Fostering the development of a high-performing digital education ecosystem (including infrastructure, connectivity and digital equipment/effective digital capacity planning and development and up-to-

[89] Council Recommendation of 22 May 2018 on promoting common values, inclusive education, and the European dimension of teaching ST/9010/2018/INIT *OJ C 195, 7.6.2018, p. 1–5* Available at: *https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018H0607%2801%29*

[90] https://www.european-agency.org/

[91] https://ec.europa.eu/education/education-in-the-eu/digital-education-action-plan_en

date organisational capabilities/digitally competent and confident teachers and education and training staff/high-quality learning content, user-friendly tools and secure platforms which respect e-privacy rules and ethical standards) and enhancing digital skills and competences for the digital transformation (requiring basic digital skills and competences from an early age/digital literacy, including tackling disinformation/computing education/good knowledge and understanding of data-intensive technologies, such as artificial intelligence (AI)/advanced digital skills, which produce more digital specialists/ensuring that girls and young women are equally represented in digital studies and careers.

Complementary to the above directions, interesting insides on the design of effective digital education policies can be also found in the Digital Education Policies in Europe and Beyond: Key Design Principles for More Effective Policies[92] report. This report on policy models for the integration and innovative use of digital technologies in education aims to inform, guide and inspire policy-makers at all government levels in designing new policy initiatives, or in adapting or redesigning existing ones for the digital transformation of education.

Civic education

In the "Declaration on promoting citizenship and the common values of freedom, tolerance and non-discrimination through education[93]", that was adapted by the informal meeting of EU Education Ministers in Paris on 17 March 2015, it is stated that "The primary purpose of education is not only to develop knowledge, skills, competences and attitudes and to embed fundamental values, but also to help young people - in close cooperation with parents and families - to become active, responsible, open-minded members of society".

[92] Redecker, C., Kampylis, P., Bacigalupo, M. and Punie, Y., editor(s), Conrads, J., Rasmussen, M., Winters, N., Geniet, A. and Langer, L., *Digital Education Policies in Europe and Beyond: Key Design Principles for More Effective Policies* , EUR 29000 EN, Publications Office of the European Union, Luxembourg, 2017, ISBN 978-92-79-77246-7, doi:10.2760/462941, JRC109311.

[93] https://ec.europa.eu/assets/eac/education/news/2015/documents/citizenship-education-declaration_en.pdf

The Reference Framework of Competences for Democratic Culture, which was developed by the Council of Europe, can be a tool towards this direction of promoting citizenship education.

Policies in the field - Italy

The concept of **school inclusion** entered the Italian pedagogical debate in the 90s and since 2012 , the discussion around inclusion was underlined by the concept of "special training needs" and by promoting the idea that inclusive strategies do not uniquely involve students with disability, who are fully integrated in standard school activities in regular schools but embrace the whole classroom with students with different learning difficulties, and/or who experience a temporary disadvantageous situation due to socio-cultural, emotional and/or linguistic problems[94]. With the draft and adoption of guidelines, degrees and strategic plans, there is now a greater choice regarding teaching personalization and the transition from an approach based on the integration of pupils with disabilities to an inclusive teaching model oriented towards the full educational development of the whole class group. In particular, it is emphasized in the adoption of the **Guidelines for school integration of pupils with disabilities** in 2009 and the adoption of the **Decreto Inclusione** (Inclusion Decree) in 2019, which consolidates and deepens teaching personalization. The core of this last reform is centred on the **Individualized Educational Plans** (Piani Educativi Individualizzati - PEI), which thus become the fundamental tools with which the class council is required to design a specific didactic plan for each disabled pupil.

Regarding the digital national framework, it is antecedent to the Covid outbreak. In fact, as part of the School reform approved in 2015 (Law 107/2015 - **La Buona Scuola** - The Good School), released **The National Plan for the Digital School (PNSD)**, a document designed to guide schools in innovation and digitization. The document aims to introduce new technologies in schools, to spread the idea of lifelong learning and to

[94] Fedeli L. (2021) *Teachers' perceptions of the role of technologies for inclusion. Results from a special needs training course* Università di Macerata

extend the concept of school from the physical place to virtual learning spaces; an operational vision that reflects the Government's position with respect to the most important innovation challenges of the public system, namely innovating the school system and the opportunities of digital education.

Civic education in Italian Schools, dates back to 1958 when history teachers explained it for two hours a month, only in 1979 did it become part of school curricula. Recently a big push was given, through law 92 of 20th August 2019 in which the Ministry of Education declared that civic education takes on strategic importance and its transversal declination in school disciplines represents a "founding" choice of the educational system, contributing to *"train responsible and active citizens and to promote full and conscious participation in the civic, cultural and social life of communities, in compliance with the rules, rights and duties"*. According to the law, since September 2020, Civic Education has been introduced as a transversal subject that affects all school levels, starting from pre primary up to secondary school. The teaching revolves around three main themes: CONSTITUTION - law (national and international), legality and solidarity SUSTAINABLE DEVELOPMENT- environmental education, knowledge and protection of heritage and the territory and DIGITAL CITIZENSHIP. The Law states that schools must carry out civic education for a total annual time that cannot be less than 33 hours and provides for adequate training of school staff on objectives, contents, methods , didactic practices, the organization of civic education declined in the macro-areas described above, to be transversally included in the disciplines envisaged in the specific course of study.

Policies in the field - Greece

Laws and policies on inclusive education

According to the Greek Constitution (Article 16 par. 2), the provision of free education to all citizens and at all levels of the state education system is a constitutional principle of the Greek State. Additionally, the UN Convention of the Rights of the Child (CRC) has been part of the Greek legal system since 1992 (Law 2101/1992). Article 28 and 29 of the Convention highlight the importance of education and the obligation of the state to provide free, equitable and quality education to all children. The CRC has overriding legislative power in the Greek legal system similarly to other international conventions that are ratified by the Parliament.

Other than the CRC, Article 24 of the Charter of Fundamental Rights of the European Union as well as Article 2 of the Protocol No 1 of the European Convention on Human Rights safeguard the Right to Education for all children. In terms of international legal documents, the Convention for the Elimination of all Forms of Discrimination against Women provides for that: "states must ensure that women have equal rights with men in education, including equal access to schools, vocational training, curricula and educational resources" (Law 1342/1983). These obligations are specified by a series of national laws on the inclusion of children with disabilities and children from vulnerable groups (Roma, refugees, migrants e.tc.).

More specifically, regarding the inclusion of children with disabilities, the Law 3699/2008 acknowledges the need for supporting children with disabilities in a holistic way. A few years later, in 2012, Greece ratified the UN Convention on the Rights of People with Disabilities. As such, inclusive education principles were further reinforced and embodied in a number of relevant measures and initiatives. In 2016, the Law 4368/2016 redefined the objectives of inclusion classes to avoid learners being discriminated against by being pulled out of mainstream classes to attend inclusion classes. On top

of that it should be noted that Laws 3699/2008 and 4547/2018 provide for the design and implementation of early intervention programmes for children with disabilities.

As far as the cultural backgrounds of the students is concerned, in 2001, the Law 2910/2001 provided for the right of migrant children to attend public education. This law has been partially abolished but the right to education for refugee and migrant children has been specified by a series of other legal instruments. Indicatively, the Laws 3879/2010 (article 26, par. 1a and 1b) on "Educational Priority Zones" (ZEPs), 4547/2018 (article 73) on Reception Structures for Refugee Education (DYEP) and the Presidential Decree 79/2017 set forth the requirements of school registration for populations on the move (including Roma children).

Finally, in May 2020 and July 2021 two new laws were introduced to establish reforms on the Greek educational system. Although, the Law 4692/2020 was said to bring new standards for the inclusion of all students (for LGBTQ+ as well), the direction and the spirit of these reforms do not suffice to realize these changes. On the contrary, inclusion seems to be attempted in theory but not in practice.

It is important to stress that the country has not adopted a national education strategy or an action plan to strategically set objectives on education. The development of a long-term student-centered vision and of a long-term coherent educational strategy have been listed first by OECD[95] among the pre-conditions for future investments in education in Greece to be effective.

Despite the existence of laws and policies, their ineffective implementation and the persistent gaps and practical barriers block access to school for many children in the country (e.g. refugee children in the camps). Furthermore, students' socio-economic background plays a significant role in their performance, with 46.4% of students of the lowest socio-economic quartile being underachievers in reading, compared to 15.2% from the highest quartile (EU-27 average gap is 26.9 pps) and 48.3% of student with

[95] OECD (2018), "The Greek education system in context", in *Education for a Bright Future in Greece*, OECD Publishing, Paris. DOI: https://doi.org/10.1787/9789264298750-3-en

migrant background being low achievers, compared to 27.4% of those without migrant background[96].

Nevertheless, according to the European Commission Education and Training Monitor 2020 report[97], inclusive education is expected to be strengthened as the Ministry of Education is cooperating with the European Commission and the European Agency for Special Needs and Inclusive Education on the new law and work is under way to develop a framework and practical guidelines for schools by drawing on European good practices.

Laws, policies, framework for digital education

In Greece, the Computer Technology Institute and Press 'Diophantus' is the main supporting body for digital education at school. It is responsible for the publishing of printed and electronic educational materials and the administration and management of the Greek School Network. Moreover, the Institute supports the organisation and operation of the electronic infrastructure of the Greek Ministry of Education, schools and other educational actors. It conducts research in ICT and provides continuing professional development for teachers on digital education. The Institute of Educational Policy, on the other hand, is responsible for providing scientific and technical support for policy planning and implementation. The Institute mainly provides research expertise to the Ministry of Education on primary and secondary education, and on the transition from secondary to higher education. The Institute has also an advisory role to the Ministry on digital education.[98]

As mentioned also in the previous section, there is no long-term education strategy in the country to reflect national priorities and objectives as well as emerging needs and trends. Therefore, any provisions and policies around the use of digital means in education should be sought in other policy areas. Despite the fact of digital education becoming a priority during the last period, the results are still not evident. In Greece, a

[96] European Commission (2020). *Education and Training Monitor 2020 Country Analysis*, Luxembourg: Publication Office of the European Union.
[97] Ibid.
[98] European Commission/EACEA/Eurydice (2019). *Digital Education at School in Europe. Eurydice Report*. Luxembourg: Publications Office of the European Union.

large number of teacher trainings has been implemented (see also chapter 2) and considerable efforts have been to upgrade the digital infrastructure, but still the country lags behind other EU countries, regarding digital infrastructures in schools[99]. So far, not all the schools in the country are well occupied with proper access to digital means and modern equipment, even though especially after the outbreak of COVID-19 important steps have been made towards the digital readiness of the Greek educational system.

As education is a solid branch of the public sector in the country, the developments on digital education in Greece will be aligned with the overall digital transformation of the public sector. The Bible of Digital Transformation (2020 – 2025) and the Law 4727/2020 on digital communications and other provisions (transposing Directives 1) 2016/2102 of the European Parliament and of the Council of 26 October 2016 on the accessibility of the websites and mobile applications of public sector bodies and 2) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information (recast) include points on acquiring digital skills related to education. On top of that the Law 4692/2020 that was voted by the Parliamentd uring the first lockdown in 2020, indicates the use of digital means in education. All the above are not initiatives of the Greek State. As an EU member state, Greece follows the developments in the relevant fields. The reference documents for Greece are the "European Skills Agenda for Sustainable Competitiveness, Social Fairness and Resilience" and the EU Action Plan on Digital Education. It is important to note that although the Ministry of Education is the competent state body for education issues, the Ministries of 1) Digital Governance, 2) Development and Investments are also involved as digital education is perceived as an aspect of digital innovation. Digitalization of the public governance system and the public sector (including education) is also the core of the Action Plan for the Growth of Greek Economy (widely known as Pissaridis Report) that was published last year.

With regards to the future, further developments are expected in the field of digital education, in the framework of the of the Action for the Digital Transformation of

[99] European Commission (2020). *Education and Training Monitor 2020 Country Analysis*, Luxembourg: Publication Office of the European Union.

Education, via the collaboration of the Ministry of Education and Religious Affairs with the Ministry of Digital Governance and from the investment of 1.3 billion euros of the Fund for Recovery and Resilience in the field of education of the country, in the framework of "Greece 2.0".

Exiting a period, where, as an emergency measure, the shift from the physical presence at schools to the use of digital platforms became a reality for the Greek students and teachers, with the danger of having to swift back to distance education being still in place, and having entered an era where the role and use of ICT in education is growing, there is now a bigger need that ever for the introduction of digital means in education in Greece to be regulated. Any policies and practices introduced for digital education in the country should guarantee the equal access and participation of all the students across the country despite the setting they live in and any other situation that can potentially hinder the enjoyment of the right to education.

Laws and policies related to civic education

Civic education is considered to be critical for the country, especially during the last 30 years. Before the '80s, educating democratic citizens was the prevalent aspect of civic education in Greece. The Ministers of Education of those times released circulars and laws to provide for the specific requirements of the relevant classes in the public school system. During the '90s emphasis was put on the legal aspect of citizenship and the institutions of the Greek state (Ministerial Decisions Γ2/6953/1997 and 128416/Γ2/19-10-2009). The Law 2413/1996 (that is partially abolished) introduced the concepts of democratic citizen.

In theory, the educational system is directed to the formation of active citizens. As a result, elements of the active citizenship education should be encapsulated in the curricula of all levels of educations and should not be provided only as individual classes. However, this is not happening in reality. Teaching of classes that promote active citizenship has been reduced. Humanities and art are almost absent from school curricula, especially in the secondary education. Although, the Law 4692/2020 that was voted by the Parliament during the first lockdown in 2020, includes provisions on civic education, a series of classes related to arts and humanities was diminished.

Today, civic education is taking place via a Cross-Thematic Curriculum Framework for compulsory education with two or three teaching periods per week that are devoted to

interdisciplinary project-based activities (related to a range of topics relevant to citizenship education, including 'participating in school and out-of-school activities'; 'using the media'; 'gender equality'; 'intercultural communication and interaction).

From the school year 2021-22 a new initiative of Ministry of Education named "21st Century Skills Labs" with the slogan "Think Globally and Act Locally was induced as a compulsory teaching subject in primary education (6-12) and lower secondary education (13-15). It is a quite important step for the promotion and integration of civic and global citizenship education withing the official curriculum. Through this initiative is being secured trainings, time, and educational materials for educators so as to incorporate civic education in their teaching. This initiative was awarded by GENE and is the first time that the importance of Global Citizenship Education is recognized and the SDG 4,7 is fully supported by the Greek Ministry of Education. Actually the Greek Ministry of Education, Ms Niki Kerameos on November 2021 is member of the High-Level Advisory Group for the promotion of UNESCO SDG 4.7. These are prominent news for civic and global citizenship education; however we need to closely monitor the implementation and the sustainability of the initiative and also that the educators are supported adequately for this new reality.

Policies in the field - Romania

The legislative framework of inclusive education in Romania

Article 50 of the Romanian Constitution regulates the status of persons with disabilities: “persons with disabilities enjoy special protection. The state ensures the implementation of a national policy of equal opportunities, prevention and treatment of disability, in order to effectively involve persons with disabilities in community life, respecting the rights and duties of parents and guardians. "

In Romania, children with disabilities can opt for classical education, in school or home-schooling (accepted, but insufficiently regulated).

A measure at national level is "Educated Romania" - a national project initiated by the Romanian Presidency, which includes a series of priority areas, with specific objectives and measures. One of them is quality inclusive education for all children: increasing access to education for those from disadvantaged backgrounds, reducing early school leaving, school reintegration programs, inclusive pedagogy, pro-equity policies, counselling services.

National policies for digital education in Romania

In December 2020, a 97 page document named “Strategy on Digitalization of Education in Romania 2021 - 2027” was proposed by the former Ministry of Education and Research for public consultations. The strategy was not adopted but is being considered for future references.

Directions of action of the **SMART-Edu Strategy**:

- Development of digital skills at all levels of cross-curricular education, through specialized disciplines, through formal and non-formal activities;
- Supporting initial and continuing digital training of teachers;

- Improving the digital infrastructure to reduce connectivity gaps (internet connection, creation of internal networks, equipment, technical support);
- Stimulating educational units and institutions for educational offers with digital specializations and qualifications appropriate to the professions of the future;
- Development of digital educational tools, encouraging innovation to adapt creative, interactive, student-cantered educational solutions;
- Creating attractive Open Educational Resources;
- Development and multiplication of public-private partnerships through participation in digital networks, including with European and international bodies;
- Exchange of good practices on local educational platforms, national e-learning, respectively on international platforms (SELFIE, e-Twinning, s.a.);
- Encourage and promote initiatives on online security, data protection, cyber hygiene, IT ethics;
- Development of the strategic forecasting framework for the green economy and adaptation to the trades of the future.

In the new Ministry of Education project, one of the priority areas of the governmental **project "Educated Romania"** is DIGITALIZATION: development of digital skills of students and teachers, development of a digital ecosystem of education, programs and education for data security and cyber security. The project is running since 2016 and so far, among the project's results is also the acquisition of at least basic digital skills (including teaching through digital tools - digital literacy) by all teachers and by at least 85% of 8th grade students.

The new strategy has 5 objectives with several measures to be implemented by 2027. It talks about the examples of countries such as Estonia and Norway, but also about plans and priorities in the field at EU level, such as the Digital Education Action Plan 2021-2027.

Objectives and measures proposed regarding digitization in the Educated Romania project:

1. Development of digital skills of pupils and students

Measures:

- Elaboration of a competency profile for pupils / students, which will meet a minimum set of characteristics;
- Digital literacy of as many students as possible;

- Development of mechanisms for assessing and certifying the digital competences of pupils and students, acquired in both formal and non-formal contexts.
- From this perspective, Romania will also participate in international assessments aimed at digital skills. The European Certificate of Digital Competence (ESDC), to be developed by the European Commission, can be obtained by Romanian pupils and students.
- Establishing public-private partnerships for the development and certification of digital skills among teachers, pupils and students;
- Carrying out peer-learning activities with states that have proven performances in the development of digital skills (e.g. Estonia);
- Encouraging national coding and robotics competitions, as well as setting up dedicated clubs at the level of educational / local units.

2. Initial and continuous training of teachers for digital education

Measures:

- Inclusion of digital skills as part of the teacher's skills profile;
- Inclusion, in the initial teacher training programs, of some components aimed at the development of digital skills;
- Development of a mechanism for assessing teachers' digital skills;
- Inclusion, in the mechanisms for monitoring and evaluation of teachers, of some aspects related to the application of digital competences in the teaching activity;
- Ensuring access to continuing education courses;
- Development of alternative routes of continuous training, in the field of digital skills;
- Promoting, within Erasmus + mobilities, training programs aimed at developing digital skills for teaching.

3. Development of digital skills among auxiliary and non-teaching staff in the education system.

Measures:

- Defining a minimum set of digital competences that the different categories of auxiliary and non-teaching staff in the education system must have;
- Ensuring adequate continuing education programs.
- Development of a platform / system through which administrative documents can be submitted electronically at the level of the educational unit or in the activities carried out by the central and local public institutions.

4. Develop a digital education and training ecosystem to bridge the gap

Measures:

The priority is to achieve the following three basic conditions in all schools:

- Very high capacity internet access
- Existence of a functional computer laboratory, in which there are sufficient adequate hardware and software resources;
- The existence of teachers with basic digital skills, who can ensure the training of students and colleagues in the school.

5. Providing programs for cybersecurity, data protection, online security and IT ethics

Measures:

- Ensuring the conditions - administrative and technical - of security / protection of personal data, for the optimal development of the online education process;
- Specific training of pupils, students and teachers, for awareness and prevention of the risks associated with the online environment, for the responsible and safe use of digital devices and platforms;
- Development of training modules in the field of online security, data processing and protection, combating cyber-bullying, etc.;
- Using public-private partnerships to raise awareness and train teachers and students about vulnerabilities associated with the online environment and to encourage positive behaviours

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National policies for civic education in Romania

Curricular policies

Efforts have continued to modernize the school curriculum for primary education, lower secondary education, high-school education, and technical and vocational education and training. Subject curricula for the subjects included in the Core Curriculum for lower secondary education have been approved and are applied now, except for the subjects of the Differentiated Curriculum for primary and lower secondary arts education.

Draft Framework Curricula for high-school – the academic, aptitude-based, and technological paths – have been developed and published for public consultation. In the period 2019-2020, 453 subject curricula have been developed for special education at preschool, primary and lower secondary levels, in accordance with the related Framework Curricula approved by the Order of the Education Minister no. 3622/2018. Several vocational training standards and a curriculum have been developed and will be approved by an Order of Minister (One vocational qualification has been approved for the profession of "string instrument maker" and other vocational qualifications are being developed for the professions "auto electrician", "subassembly mounting operator" (Level 3 according to the National Qualification Framework - NQF) and "advertising designer" (Level 5 - NQF).

In the **project CRED** - Relevant Curriculum, Education Open to All, several documents have been developed:

- the educational policy document Guidelines for designing, updating and evaluating the National Curriculum;
- an Order of Minister has approved the Methodology for the development of the school-based curriculum and the Methodology for the organisation of the programme "A Second Chance" – primary education;
- also the Methodology for the organisation of the programme "A Second Chance" – secondary education has been drafted and
- the structure of the working documents has been designed for 18 methodological guides related to the implementation of the National Curriculum in primary and lower secondary education.

The competence framework for teachers does not have anything specific for civic education, it is assumed that they can teach anything in their basic specialization (eg, civic education is taught by professionals who have done social sciences). Civic education curriculum is available only for students in grades 9 - 12 but it mostly focuses on religious education and some parts on human rights.

Policies in the field - Portugal

According to the European Commission (2021)[100], the Digital Education Action Plan (2021-2027) is a renewed European Union (EU) policy initiative to support the sustainable and effective adaptation of EU Member States' education and training systems to the digital age.

The Action Plan defines two priority areas: promote the development of a highly effective digital education ecosystem and strengthen digital competences and skills for digital transformation. It includes actions from Digital Transformation Plans for education and training institutions as well as guidelines for teachers and educators to promote digital literacy and fight misinformation through education and training. At national level, Portugal also approved a Transition Digital Plan that includes measures for schools (Resolução do Conselho de Ministros n. º 30/2020). Previously, in 2017, the Portuguese government constituted the "National Digital Competence Initiative e.2030, Portugal INCoDe.2030", an integrated public policy program that aims to promote digital competences.

In Portugal there is an inclusive education law decree (DRE) Law nº 54/2018[101](updated by the Law 116/2019), which establishes the legal regime for inclusive education with the purpose of promoting a school where each and every student, regardless of their personal and social situation, find answers that enable them to acquire a level of education and training that facilitates of its full social inclusion.

Within the scope of the priorities defined in the XXI Constitutional Government's Program for the area of education, the National Strategy for Citizenship Education

[100] European Commission. (2021). *The Digital Education Action Plan (2021-2027).* https://ec.europa.eu/education/education-in-the-eu/digital-education-action-plan_en

[101] Decreto-lei Nº. 54/2018, de 6 de julho. Diário da República n.º 129/2018 - Serie I. Lisboa: Presidência do Conselho de Ministros. https://dre.pt/home/-/dre/115652961/details/maximized

(ENEC) was produced. The subject of Citizenship and Development is part of the components of the national curriculum and is developed in schools, thus assuming itself as a privileged curricular space for development and learning with three-dimensional impact on individual civic attitude, interpersonal relationships and in social and intercultural relationships (Estratégia Nacional de Educação para a Cidadania, 2017)[102].

[102] DGE. (2017). *Estratégia Nacional de Educação para a Cidadania*

https://www.dge.mec.pt/sites/default/files/Projetos_Curriculares/Aprendizagens_Essenciais/estrategia_cidadania_original.pdf

CONCLUSIONS

Overall main findings

The transition to remote online teaching due to COVID-19 was not without challenges in all four countries participating in our research, with the most commonly faced ones by **teachers** being **students' motivation and engagement**, **increased workload and stress working from home** and involving students from **socially disadvantaged homes**. COVID-19 brought to light many critical issues in the education systems, not only in terms of infrastructure (connection, devices, etc.) but also in the adequacy of teachers' digital readiness and vulnerable students' digital inclusiveness. COVID-19 has also had a major impact on students, especially on the most vulnerable. For them the transition to distance learning has suffered many difficulties, as, as shown by the BET research especially in the case of **vulnerable students**, teachers identified that challenges related to resources (access to a **stable internet connection**, access **to digital tools** and **lack of an adequate place at home)** prevailed. Nevertheless, also some opportunities have emerged during this crisis, as it accelerated developments around digital education and helped teachers get acquainted with the use of digital tools in education.

Teachers in all 4 countries agreed on the **use of digital technologies to enhance inclusion, personalisation and learners' active engagement being the most important skills area** in the field of digital education. This was also the skills area that most of the participating teachers in all 4 countries would like to improve, followed by managing and orchestrating the use of digital technologies in teaching and learning. More than half of the participants in the BET survey **had participated in a training on the use of digital technologies in teaching and education during the last year.** Nevertheless, when it comes to teacher preparedness to use digital tools in education and training, the findings of our research are mixed. While the majority of the teachers participating in the BET survey feels prepared for using digital technologies for education, when asked about their colleagues' preparedness, agreement percentages drop.

With regards to training preferences, if they were to attend a training on digital education, the **majority showed a preference for an online format**, a smaller percentage preferred a blended format, while a small only percentage preferred in presence training.

In general, the use of digital tools in education both the use inside the classroom and outside was found to be widespread, with bigger percentages in the first case. Teachers also seem to have a positive attitude towards the use of digital tools in education.

With regards to opportunities/advantages of the use of digital tools in education It is shared opinion that the technologies could enhance the learning process in students with vulnerabilities, but the understanding of how and which technologies are more efficient and how to integrate their use in the process of personalized and individualized learning, is still missing. The study also served to highlight the importance of the use of digital technologies to enhance inclusion, personalization and learners' active engagement, but for this it is necessary to provide teachers inclusion skills, focused on students with vulnerabilities. Technology brings opportunities inside and outside the classroom, such as providing increased engagement and motivation by students as well as innovative and engaging ways of teaching/learning, and flexibility, learning/teaching at one's own pace. Furthermore, especially in the case of Romania, a decrease of the bullying phenomenon has been observed during the period of online education, while the Strategy on the Digitalization of Education is expected to bring more opportunities in the future with regards to digital education.

Education has a strong bond with inequalities and likewise digital learning is an opportunity to reduce social, geographic and economic inequalities. Digital education is a still unexplored opportunity to reduce inequalities between territories, to resolve difficulties that previously seemed insurmountable (such as the closure of schools, etc.) On a global level, this could allow students in disadvantaged countries (with few or lacking education opportunities) access to quality education (SDG 4 targets 4.1 and 4.5) hence overcoming those barriers given by the relationship between few education opportunities and where you are born.

Despite the above opportunities of the use of digital tools in education, we must also not overlook some **challenges and risks associated with it.** The analysis carried out revealed a series of logistical, pedagogical, technical and content impediments. It is also clear that using digital learning in an inappropriate way is a risk for vulnerable students as it can increase the exclusion gap (e.g. lack of devices, connectivity, family support) and therefore requires attention as well as teachers' specific training and collaboration.

Overall recommendations

The BET research has highlighted that digital technologies in education can and should be used towards the direction of increasing inclusion. Digital education should be used to reduce inequalities in education, to promote social inclusion and to address the needs of vulnerable students. Furthermore, it should be used to adapt teaching and learning methods to each student in its individuality and promote learner`s engagement.

Investments needed in:

a) Teacher skills in all countries
We should invest in teachers' digital competences with emphasis on skills for inclusion and personalization and skills as regards didactic planning or the transfer of competences to students in a digital environment. Also, Area 4 of the DigiCompEdu Framework (Assessment) needs to be updated in light of increased digital education environments Furthermore, the existing knowledge, skills and best paradigms of teachers should be capitalized and incentives should be provided.
b) Equipment and internet for Greece and Portugal
We should not sacrifice constitutional principles such as equal access for all to education. Investment in equipment and internet connections must be made and schools should be provided with the necessary equipment to respond to the challenges of a globalized and digital society and provide each teacher and student the access to a computer or tablet and good internet speed. Specifically for Romania it is more an issue of management of equipment distribution, while the internet the problem exists more for remote rural areas.

Except of the above horizontal recommendations for the survey countries, also some main country specific recommendations have derived from our research, as following.

For **Greece** it would be recommended that efforts on digital education should be part of a national long-term strategy for education, taking into account the latest developments in the field, utilizing the experience and learnings of the covid period, and be built with the engagement of all stakeholders. Furthermore, that a holistic approach is needed on the matter and any effort should take into account the needs and peculiarities of teachers - students - parents.

For **Italy** it would be recommended to implement specific training courses (and materials to use) for teachers who teach civic education (introduced as a transversal

subject that affects all school levels, starting from pre-primary up to secondary school since September 2020) on digital education approaches and methodologies when teaching this subject. Many teachers need to improve their skills and, most of all, change their approach to digital technology, considering it an integral part of everyday life, so that students can become "active digital citizens". Furthermore, educational poverty should also include incentive for didactic and pedagogical innovation, the strengthening of vocational education, the creation of priority education zones between the areas with a higher incidence of early leaving, the strengthening of educational communities (networks of schools and other educational / training territorial extracurricular realities).

For **Romania**, it would be recommended to not only focus on online tools, because they will change very often. Teachers should continue to focus on their learning objectives and try to reach their students with what they have, even if it's just a card game or a simple tool. This objective could help teachers keep the focus and help your students to become better. Furthermore, teacher trainings should be organised so that teachers learn how to plan lessons, how to evaluate student's performance and how to organise exams online. In some rural areas there is also a need for teachers to learn how to use a computer and have basic digital skills, before learning how to plan an online lesson. Additionally, ways should be sought to increase the motivation level and it would be helpful if digital educational content (digital resources) would be developed.

Finally for **Portugal** it would be recommended to promote digital literacy to enhance critical thinking and active citizenship, tackling the DigiCompEdu Framework. Also, while providing a digital education, the educational community (parents, teachers, students, school staff, ...) should be taken into consideration and the socio-economic and emotional context of each one should be considered, so that in the end it's possible to respond to the student's academic and emotional needs through different strategies (online, face to face and blended learning).

The analysis of the recommendations on a country level follows in the following sections.

Conclusions - Italy

The present research, together with other findings, has shown how the Covid pandemic brought to light many critical issues in the Italian education system, not only in terms of infrastructure (connection, devices, etc.) but also in the adequacy of teachers' digital readiness and vulnerable students' digital inclusiveness. On the other hand it has also shown how the pandemic has provided opportunities to adopt faster new digital tools and develop new skills.

Specifically, the shared perception is that many teachers still lack digital preparation especially regarding didactic planning which refers to the competences needed to transfer teaching and learning contents to a digital environment.

Teachers' training is certainly one of the main aspects to strengthen in order to facilitate the transition towards a more digital school and to gather at its best the opportunity to use new technologies in education. So far, enhancing teachers' competences has been left to individual initiative even if there is a steer in this direction on an institutional level.

The EU Teachers competences framework plays a very useful role in identifying the areas of focus in order to enhance the set of digital competences needed for teaching and professional learning. According to the information gathered in our research, Area 3 (Teaching and learning with a focus on collaborative learning) and 5 (Empowering learners with a focus on differentiation and personalisation and actively engaging learners) deserve special attention when designing training courses for teachers. Also Area 4 (Assessment) needs to be updated in light of increased digital education environments.

It is a shared opinion that technologies could enhance the learning process for students with vulnerabilities, but there is still little understanding of how and which

technologies are more efficient and how to integrate their use in the process of personalized and individualized learning.

However, it is also clear that using digital learning in an inappropriate way is a risk for vulnerable students as it can increase the exclusion gap (e.g. lack of devices, connectivity, independence, family support) and therefore requires attention as well as teachers' specific training and collaboration.

Education has a strong bond with inequalities and likewise digital learning is an opportunity to reduce social, geographic and economic inequalities.

Digital education is a still unexplored opportunity to reduce inequalities between territories, to resolve difficulties that previously seemed insurmountable (such as the depopulation of internal areas and closure of schools, etc.)

On a global level, this could allow students in disadvantaged countries (with few or lacking education opportunities) access to quality education (SDG 4 targets 4.1 and 4.5) hence overcoming those barriers given by the relationship between few education opportunities and where you are born.

Finally, our research also provided concrete elements to identify teachers' training needs and design new solutions with the aim of training active students aware of the importance of active and digital responsible citizenship. There is the need for specific training courses (and materials to use) for teachers who teach civic education, on digital education approaches and methodologies when teaching this subject. Many teachers need to improve their skills and, most of all, change their approach to digital technology, considering it an integral part of everyday life, so that students can become "active digital citizens".

Conclusions - Greece

Summary of the main findings

The Greek education system was not ready for the COVID 19 implications. The 3 main challenges faced by teachers were pupils' access to digital tools (devices, computers, software…), involving pupils from socially disadvantaged homes and keeping all pupils motivated and engaged. Especially for vulnerable students, the challenges were primarily related to infrastructure (stable internet connection, access to digital tools – such as devices, computers, software, lack of an adequate place at home) and then with their ability to engage in the educational process (lack of motivation and engagement, disaffection, low levels of pupils' digital competencies and tiredness / fatigue of students).

When asked about important teacher competencies in the field of digital education, almost half of the participants in our survey in Greece said that the most important skill area is the use of digital technologies to enhance inclusion, personalization and learners 'active engagement, while managing and orchestrating the use of digital technologies in teaching and learning followed with a slightly lower percentage. The same prioritization also applied when asked about the skill areas that they would like to improve in the future. Furthermore, a clear preference of online training, compared to face-to-face training was also evident in our research. With regards to initial teacher training, in the case of primary education digital education seems to be part of the curricula of pedagogical universities, but there is scope for increasing the number of laboratories for the pedagogical use of ICT in education. In the case of secondary education it seems that also a need to increase pedagogical courses in general may exist. At the same time, with regards to teacher continuous education, ICT trainings for teachers have been organized for many years, while during the COVID period, extra trainings were organized. Compared to other research countries, the percentages of Greek teachers who had attended relevant training in the last year were significantly higher in our search. Nevertheless, without a National Teacher Qualifications Framework there can be no common reference base for initial teacher education for

the different universities that prepare future teachers and also no coherent training policy for teachers' continuous education in order to respond to the challenges of the future.

According to the findings of our research the use of digital tools in education seems to be quite widespread both inside and outside the classroom (with higher rates in the first case). The most used platforms are those created and proposed by the official educational system (like Photodentro, e-me, Webex).

When asked how digital education could help increase inclusion of vulnerable students, teachers mention personalization and differentiated teaching, asynchronous teaching and flexible time of implementation, the opportunity for bigger participation and giving introverted students the opportunity to show their skills, the presentation of elements of student's different cultures. the creation/ provision of free, flexible appropriate digital tools, educational games and digital collaborative projects and multimedia audiovisual texts, interactive exercises with self-assessment. On the other hand, when asked how digital education could cause less inclusion of vulnerabe students, teachers mainly refer to the lack of equipment, internet connection. Digital skills and support were also mentioned, as well as the need to create the conditions for participation (smaller classes, differentiated teaching), while a special reference was made to children living in structures, institutions, that face extra barriers.

Finally, regarding policies in the field, a legal basis for inclusive education, as well as initiatives for digital education exist in Greece. What is missing is a long-term strategy for education, where everything will come together and the "translation" of legal provisions into actions.

Recommendations

Digital education cannot replace the face-to-face operation of the school as the role of the school is broader. School is an important agent of socialization and when we are talking about education we are talking about the transmission of values and attitudes and not only sterile knowledge. However, the use of digital tools in the educational process can be accompanied by a large number of benefits, like making a positive difference on learning, making learning more interesting and teaching easier, enhancing learning inside the classroom and providing learning opportunities outside the classroom and enhancing inclusion (under conditions).

In our attempt to grasp these benefits we should however not sacrifice constitutional principles such as equal access for all to education. It is therefore necessary to further invest in the access to devices and reliable and affordable internet connections for all.

Furthermore, the actions/ advancements that will be made in the field of digital education should be part of a national long-term strategy for education, that will take into account the latest developments in the field, utilizing the experience and learnings of the COVID period, build with the engagement of all related stakeholders.

A holistic approach is needed on the matter of digital education and any effort should take into account the needs and particularities of all main stakeholders, teachers - parents - students.

Especially with regards to teachers a National Teacher Qualifications Framework should be created in order to act a long-term benchmark/ guideline for initial teacher training and further teacher trainings. As part of this, we should also invest in the pedagogical skills of educators for the use of ICT in education, with emphasis on skills for using digital technologies to enhance inclusion, personalisation and learners' active engagement.

Conclusions - Romania

Summary of main findings

Although there is a national project on the digital competence of teachers, implemented by MEC and funded by the Human Capital Operational Program 2014-2020 - "Relevant Curriculum, Education Open to All" (CRED), SMIS code 118327 -, target country of 55,000 teachers trained (until 2022) to use open educational resources and to change the teaching approach, there is still a major deficit of professional digital skills at the level of teachers in the pre-university education system in Romania. These skills are not only about using the computer in teaching, but about a certain type of teaching-learning strategy, about the development of open educational resources, about a certain attitude towards technology, and so on.

The analysis carried out revealed a series of logistical, pedagogical, technical and content impediments in the field of many school subjects. Among the difficulties in carrying out distance teaching activities, teachers report, in order: lack of tools for classroom management, feedback and evaluation, technical difficulties - platforms to be installed, not working, lack of pedagogical support for carrying out sufficient learning activities effective and / or attractive to all students: lack of appropriate tools for teaching-learning assessment in their subject, lack of educational content (digital resources) in the subject, lack of a sufficiently efficient computer and lack of time to understand and use digital tools and resources.

Recommendations

As shown from the interviews, some of the key lessons learned can be turned into opportunities for education.

One key lesson is that we learned that this is possible and we can have online education with good results. We have some good examples of teachers available to teach other teachers and to share their good and less good experiences. You just have to search

online for what you want and you can find answers but professional guidance is needed when you want to make sure you have the right answers for you or for your students.

You need to know at least one foreign language: English, French or German but mainly English in order to learn about digital tools and platforms. In order to have online education we need infrastructure and it has to reach all areas from rural schools to government structures. As it is your right to have access to digital education is also your right to have access to digital infrastructure and tools.

A teacher must be very well prepared to cope because in the pandemic the transfer of knowledge was done in many cases rather from the student to the teacher. Especially in high school, teachers worked on certain tasks with students. A positive aspect is the fact that these teachers were open to learning from the students.

In every segment of the school, this process of using digital tools every day has been imprinted. The main lesson is that even if they are not face to face, teachers have the resources to keep students' interest awake.

What we can transfer in the green scenario are those applications that made the online classes interesting, we have to keep the mixed activities accompanied by technology, for example, uploading the homework on the classroom platform. We must not forget the beneficial collaboration of parents in some cases. The school must first find resources from within and then financial resources.

The interviewed digital expert recommends: Do not concentrate on online tools only because they will change very often. They will be updated each month. Continue to focus on your learning objectives and try to reach them with what you have, even if it’s just a card game or a simple tool. This objective will help you keep the focus and help your students to become better.

Conclusions - Portugal

Summary of the main findings

COVID-19 introduced a new digital era in education. According to the study, it was a difficult transition for the entire school community, especially for teachers who increased workload and stress working from home. In addition, it has had a major impact on students, especially on the most vulnerable. From the lack of equipment and internet network in schools, to the lack of conditions at each student's home, the transition to distance learning has suffered many difficulties. In Portugal, attempts were made to create conditions and support in response to the pandemic, such as the launch of the television program #EstudoEmCasa (#StudyAtHome). However, the lack of investment in education over the years made it impossible to make it digital for everyone. According to the study, less than half of the students actively participated in distance education sessions during the COVID crisis. It is necessary to invest not just in equipment, but also in digital literacy and competencies.

The study also served to highlight the importance of the use of digital technologies to enhance inclusion, personalization and learners' active engagement, but for this it is necessary to equip teachers with inclusion skills, focused on students with vulnerabilities.

According to the results, more than half of the teachers have attended trainings on the use of digital tools in education and almost half of them have started to introduce these tools in the classrooms, through online platforms, multimedia resources and shared repositories. However, the percentage of students using digital tools for homework is low. Still, technology brings opportunities inside and outside the classroom, such as providing increased engagement and motivation by students as well as innovative and engaging ways of teaching/learning, and flexibility, learning/teaching at one's own pace. Overall, 90% of teachers intend to continue investing in more digital education, introducing new pedagogical methodologies that motivate students.

Recommendations

The proposed recommendations are:

- Use digital education to promote social inclusion and to address the needs of vulnerable students;
- Use digital education to adapt teaching and learning methods to each student in its individuality, and promote learner`s engagement;
- Provide schools with the necessary equipment to respond to the challenges of a globalized and digital society, and provide each teacher and student the access to a computer or tablet and good internet speed.
- Promote digital literacy to enhance critical thinking and active citizenship, tackling the DigiCompEdu Framework;
- While providing a digital education, take in consideration the educational community (parents, teachers, students, school staff,...) and consider the socio-economic and emotional context of each one, so that in the end it's possible to respond to the student's academic and emotional needs through different strategies (online, face to face and blended-learning).

APPENDIX

Appendix 1 - Online survey questions (in English)

i. **Do you consent with your personal data being processed as described in this privacy information** [link]? You must select "Yes" in order to take the survey.
   - Yes
   - No[stop questionnaire]

ii. **Where are you from?**
   - Greece → Questionnaire in Greek
   - Italy → Questionnaire in Italian
   - Portugal → Questionnaire in Portuguese
   - Romania → Questionnaire in Romanian.

iii. **What is your current position?**
   - Teacher
   - Head teacher/manager or member of the leadership team●
   - Non formal educator
   - Other

iv. (if Teacher -Head teacher/manager or member of the leadership team) **Do you work in a public or private school?**
   - Public school
   - Private school

v. **During the school year 2020/21, have you taught/ worked with students that are between 11 and 15 years old?**
   - Yes
   - No [end questionnaire]

vi. **During the school year2020/21, have you taught students in primary or secondary school?** (multiple answer)
- Primary
- Secondary

vii. (if Teacher) **What subjects do you teach?**
- Literature, grammar
- History, philosophy
- Mathematics
- Sciences (physics, biology, chemistry)
- Foreign language
- Civic education
- Information technology, computer science
- Other _____

viii. **How many years of working experience do you have as** [answer Q .3]?
- 0-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- More than 20 years

ix. **Gender:** (open-ended)(the answer to this question is optional)

x. **Age:** (dropdown menu)
- 18-34
- 35-44
- 45-54
- over 55 years old,

xi. **Where is the school you work for located ?** (dropdown menu)

(if Q2: Greece)

• Attica/ • Central Greece/ • Central Macedonia/ • Crete/ • Eastern Macedonia and Thrace/ • Epirus/ • Ionian Islands/ • North Aegean/ • Peloponnese/ • South Aegean/ • Thessaly/ • Western Greece/ • Western Macedonia

(if Q2: Italy)

• Abruzzo/ • Basilicata/ • Calabria/ • Campania/ • Emilia-Romagna/ • Friuli Venezia Giulia/ • Lazio/ • Liguria/ • Lombardia/ • Marche/ • Molise/ • Piemonte/ • Puglia/ • Sardegna/ • Sicilia/ • Tuscany/ • Trentino-Alto Adige/ • Umbria/ • Valle d'Aosta/ • Veneto

(if Q2: Portugal)

• Norte/ •Centro/ •Área Metropolitana de Lisboa / •Alentejo/ •Algarve/ •Região •Autónoma dos Açores/ •Região Autónoma da Madeira

(if Q2 : Romania)

• Nord-Vest/ • Centru/ • Nord-Est/ • Sud-Est/ • Sud – Muntenia/ • București – Ilfov/ • Sud-Vest Oltenia/ • Vest

xii. **What is your educational level?**

- Lower than university degree
- Bachelor degree
- Master degree
- PhD

xiii. **Where do you currently work?** (select all that apply)

- In an urban area
- In a semi-urban area
- In a rural area
- In a insular area
- In a remote area (e.g. marginal, mountain,...)

Introduction

Definitions

The main objective of the questionnaire is to carry out a need analysis to understand what are the key digital skills and competences needed to ensure the didactical environment is fit for purpose.

The first sections will be dedicated to digital education; then we will focus on the impact of the covid crisis.
Therefore, we suggest you keep in mind these two definitions that will be presented in the questions.

Digital education: the use of digital tools and technologies during teaching and learning, both at school and for homework.

Distance learning: a mode of teaching and learning characterized by separation of teacher and learner in time and/or place for most part of the educational transaction, mediated by technology for delivery of learning.

Section 1 - Relations between digital technologies and teaching: risks and new opportunities

1. **How often do you use digital tools (such as online platforms, multimedia resources, shared repositories) during your lessons, in the classroom?**
   - All the time
   - Most of the time
   - Approximately half the time
   - Rarely
   - Never

   Which digital tools/platforms/channels do you use the most? If applicable, provide a link for the tools.

   _____

   2. **How often do you ask students to use digital tools for homework, outside the classroom?**
   - All the time
   - Most of the time
   - Approximately half the time
   - Rarely
   - Never

   Which digital tools/platforms/channels students use the most? If applicable, provide a link for the tools.

   _____

   3. **How much do you agree with the following statements on digital tools for education?**
   - Digital tools make a positive difference on learning
   - Digital tools make learning more interesting
   - Digital tools make teaching easier
   - Digital tools provide learning opportunities outside the classroom
   - Digital tools can enhance learning inside the classroom
   - Digital tools encourage students to collaborate even when not together

   (for each statement • 1. Strongly agree/ • 2. Agree/ • 3. Neither agree, nor disagree/ • 4. Disagree/ • 5. Strongly disagree)

   4. **In your opinion, which are the two main opportunities/advantages related to the use of digital technologies for education in the classroom?**
   - Flexibility, learning/teaching at one's own pace
   - Time effectiveness

- Innovative and engaging ways of teaching/learning
- Innovative and engaging learning materials
- Innovative and engaging tools and platforms
- Helping learners develop digital skills
- Easier communication
- New ways to assess learning and get feedback
- Increased engagement and motivation by students
- Increased inclusion of vulnerable students
- Other _____

5. **And which are the two main opportunities/advantages related to the use of digital technologies for education outside the classroom (e.g. for homework)?**

- Flexibility, learning/teaching at one's own pace
- Time effectiveness
- Innovative and engaging ways of teaching/learning
- Innovative and engaging learning materials
- Innovative and engaging tools and platforms
- Helping learners develop digital skills
- Easier communication
- New ways to assess learning and get feedback
- Increased engagement and motivation by students
- Increased inclusion of vulnerable students
- Other _____

(if Increased inclusion of vulnerable students is selected in Q14 or Q15)
How do you think that digital education could help increase inclusion of vulnerable students?

_____

6. **Which are the greatest challenges/risks to face for integrating digital education inside the school?**

- Insufficient digital competences among teachers
- Insufficient digital competences among students
- Need of connectivity
- Need of suitable and up-to-date equipment
- More distractions, hard to manage time
- Poor quality of tools and platforms
- Limited availability of appropriate online materials

- Difficulty to adapt materials and teaching methodology
- Lack of engagement and motivation by students
- Less inclusion of vulnerable students
- Other _____

(if Less engagement and motivation of vulnerable students is selected in Q6)
How do you think that digital education would cause less inclusion of vulnerable students?

_____

7. **Which of the following tools/resources would you consider useful for the adaptation of the use of ICT in Inclusive and Civic Education?**

- Online educational resources on the topics
- Audiovisual material on the topics
- The provision of guidelines on how to conduct civic education activities with students that utilize ICT (i.e how to create a podcast)
- A specific training course for teachers who teach civic education, on digital education approaches and methodologies for teaching this subject
- Other _____ (please define)

Section 2 - Teacher competence frameworks, learning field of digital education

8. **How much do you agree or disagree with the following statements?**

- I feel well prepared for using digital technologies for education and teaching
- Most of my colleagues in my school are well prepared for using digital technologies for education and teaching

(for each statement • 1. Strongly agree/ • 2. Agree/ • 3. Neither agree, nor disagree/ • 4. Disagree/ • 5. Strongly disagree)

9. **In your opinion, which are the most important skills and competences for teachers in digital education? Select one area of competences.**

- Sourcing, creating and sharing digital resources
- Managing and orchestrating the use of digital technologies in teaching and learning
- Using digital technologies and strategies to enhance assessment
- Using digital technologies to enhance inclusion, personalisation and learners' active engagement

10. **And among these specific skills, related to [selected options Q9] which is the most important for teachers in digital education?**

(If "Sourcing, creating and sharing digital resources" is selected in Q9)

- **Selecting digital resources.** To identify, assess and select digital resources to support and enhance teaching and learning.
- **Creating and modifying digital resources.** To modify and build on existing openly-licensed resources and other resources where this is permitted. To create or cocreate new digital educational resources.
- **Managing, protecting and sharing digital resources.** To organise digital content and make it available to learners, parents and other educators. To effectively protect sensitive digital content and correctly apply privacy and copyright rules.

(If "Managing and orchestrating the use of digital technologies in teaching and learning" is selected in Q9)

- **Teaching.** To plan for and implement digital devices and resources in the teaching process, so as to enhance the effectiveness of teaching interventions. To experiment with and develop new formats and pedagogical methods for instruction.
- **Guidance.** To use digital technologies and services to enhance the interaction with learners, individually and collectively, within and outside the learning session. To use digital technologies to offer timely and targeted guidance and assistance.
- **Collaborative learning.** To use digital technologies to foster and enhance learner collaboration. To enable learners to use digital technologies as part of collaborative assignments
- **Self-regulated learning.** To use digital technologies to support self-regulated learning processes.

(If "Using digital technologies and strategies to enhance assessment" is selected in Q9)

- **Assessment strategies.** To use digital technologies for formative and summative assessment.
- **Analysing evidence.** To generate, select, critically analyse and interpret digital evidence on learner activity, performance and progress, in order to inform teaching and learning
- **Feedback and Planning.** To use digital technologies to provide targeted and timely feedback to learners.

(If "Using digital technologies to enhance inclusion, personalisation and learners' active engagement" is selected in Q9)

- **Accessibility and inclusion.** To ensure accessibility to learning resources and activities, for all learners, including those from disadvantaged backgrounds and vulnerable students.
- **Differentiation and personalisation.** To use digital technologies to address learners' diverse learning needs, by allowing learners to advance at different levels and speeds, and to follow individual learning pathways and objectives.
- **Actively engaging learners.** To use digital technologies to foster learners' active and creative engagement with a subject matter, such as civic education.

11. **Which types of digital skills and competences would you like to improve in the future? Select one.**

- Sourcing, creating and sharing digital resources
- Managing and orchestrating the use of digital technologies in teaching and learning
- Using digital technologies and strategies to enhance assessment
- Using digital technologies to enhance inclusion, personalisation and learners' active engagement

12. **And among these specific skills related to [selected options Q11], which one would you like to improve in the future?** See table Q10

13. **Have you attended digital training courses in the last year? Select all that apply.**

- Training on digital technologies
- Training on the use of digital technologies in teaching and education
- No, I did not attend any training on these topics **[single answer]**

14. **Who provided the training course?**

- Educational institution (Ministry of education or related authorities, agencies)
- NGOs
- Private training organization
- Other

15. **If you were to attend a training course on digital education in the future, how would you prefer to attend?**

- Via online platforms
- Blended (mixed online and in presence)
- In presence

16. **What do you consider more important in a teacher training offered? Select all that apply.**

- Certificate of attendance
- Score in official
- Access to additional services, platforms or other educational materials
- Flexibility, self paced-learning
- Other incentives_____

17. **In your experience, did you encounter some remarkable examples that you consider good practices in the use of digital education and digital tools for education in general or, specifically, for civic education?**

Please describe it below.

_____
(the answer to this question is optional)

Would you possibly be available to be recontacted to further discuss the good practice you just described?
Yes, _____ (insert email address)
No

Section 3 - The impact of Covid 19 into the educational system, with a focus on formative needs of vulnerable students

In this section we will focus on your experience during the covid crisis and which were the main challenges.

We provide the definitions of Digital education and Distance learning again, as a reference.

Digital education: the use of digital tools and technologies during teaching and learning, both at school and for homework.

Distance learning: a mode of teaching and learning characterized by separation of teacher and learner in time and/or place for most part of the educational transaction, mediated by technology for delivery of learning.

18. **What have been the main challenges that you faced in switching to online/distance learning? Choose up to five options.**

- Having access to stable internet connection
- Having access to digital tools (devices, computers, softwares…)
- Having access to online educational resources/materials
- Lack of personal experience in pedagogical approach for online education

- Lack of personal digital competences for online education
- Pupils' access to stable internet connection
- Pupils' access to digital tools (devices, computers, softwares…)
- Communicating with pupils
- Communicating with parents/caregivers
- Low levels of pupils' digital competence
- Involving pupils from socially disadvantaged homes
- Keeping all pupils motivated and engaged
- Supporting pupils with special needs and disabilities
- Converting activities and content into online/distance learning
- Little direction or support given by the school
- Increased workload and stress working from home
- Time management and organisation
- Assessment, examinations
- Tiredness/fatigue of students
- Interruptions by third parties (e.g. parents)
- Impossibility of personalized support
- Other issues _____
- There have been no challenges [SINGLE ANSWER]
- The school has not switched to online/distance learning [END QUESTIONNAIRE]

19. **Did you have any guidance (support, advice, training) on ways to involve students in distance education?**
- Yes, promptly
- Yes, but after having to deal with the new distance education reality
- No

20. **If yes, by whom did you receive guidance on ways to involve students in distance education?**
- Educational authorities
- Head teacher, managers
- Colleagues
- Other educational institutions
- Other

21. **How many of your students actively participated in distance education sessions during the covid crisis?**
- All or most of them
- More than half
- Half

- Less than half

22. **Thinking about your students from vulnerable families (those living in disadvantaged socio-economic conditions), what have been the main difficulties that they faced in switching to online/distance learning? Choose up to two options.**
- Having access to stable internet connection
- Having access to digital tools (devices, computers, softwares…)
- Having access to online educational resources/materials
- Communicating with the school, with teachers
- Low levels of pupils' digital competence
- lack of competences of teachers in involving these students
- Lack of motivation and engagement, disaffection
- Impossibility of supporting pupils with special needs and disabilities
- Little direction or support given by the school
- Increased workload and stress working from home
- Time management and organisation
- Tiredness/fatigue of students
- Interruptions by third parties (e.g. parents)
- Impossibility of personalized support
- Lack of an adequate place at home
- Other issues _____
- There have been no particular difficulties

23. **Do you think that the issue of vulnerable students' inclusion in distance education was tackled effectively in your school?**
- Yes, the response was very effective
- The response was partly effective
- No, the response was not effective
- It was not a concerning issue in my school

Could you please explain your answer, in a few words?

_____

24. **Is there anything else you would like to add?**

_____ (the answer to this question is optional)

Appendix 2 - Interview Guidelines

Before the interview.

☑ Provide the interviewee with a short description of the project and of the survey.
☑ Send the information about the collection of data to the interviewee and get their written agreement via email.
☑ Agree on the timeframe of the interview implementation (date-time-duration).
☑ If the interviewee is not familiar with the DigiCompEdu Framework, provide them with some information.

During the interview.

Introduction.

☑ Welcome and thank the interviewee for their participation.
☑ Start with a short description of the project and of the survey.
☑ Inform the interviewee that you are going to start recording. Recap the information on the collection of data and the protection of personal data, remind them of the consent received.
☑ Conduct a quick profiling of respondent (current position, experience with digital education).

Section 1: The impact of Covid 19 into the educational system.

The impact of the Covid 19 on the country's education system was obvious. Distance education using digital media suddenly entered the lives of educators and children with many obstacles, but also lessons for the future (and beyond the pandemic).

1. **How would you describe the Covid 19 reality in the educational system of your country? What were schools and digital education like in your country before Covid 19 and how did they transform afterwards? Do you see other Covid 19 impact in educational system of your country?**
2. **What are the key lessons we learned, based on your experience, and how can we turn some of them into opportunities for education?**

Section 2: Relations between digital technologies and teaching; risks and new opportunities.

At this point it might be useful to clarify the following terms:

We define digital education as the use of digital tools and technologies during teaching and learning, both at school and for homework.

Distance learning, on the other hand, is defined as a mode of teaching and learning characterized by separation of teacher and learner in time and/or place for most part of the educational transaction, mediated by technology for delivery of learning.

3. **What is the added value of digital education? Main opportunities and advantages, both for lessons in the classroom and homework.**

According to the results of the survey, teachers think that the use of digital technologies can ensure more flexibility, learning/teaching at one's own pace, and provide more engaging ways of teaching/learning.

4. **Which are the greatest challenges and obstacles to face for achieving a more digital school?**

Section 3: Teacher competence frameworks and learning field of digital education - Formative needs of teachers and educators.

As you may already know the EU has developed a framework for the development of educators' competencies needed to seize the potential of digital technologies for enhancing and innovating education, the European Framework for the Digital Competence of Educators (DigiCompEdu) and its related self-assessment tool (https://ec.europa.eu/eusurvey/runner/DigCompEdu-H-EN)

5. **Keeping in mind the DigiCompEdu framework, do you believe educators in your country are facing some gaps with regards to their digital competencies/skills? If yes, which do you consider being the main gaps in the digital skills of teachers?**
6. **Do you know if the institutions in your country are doing / will do something to improve teachers' digital skills? Are they working on new training to support teachers in the use of digital tools?**

In our country xx% (completed for each country) of the respondents of the questionnaires took part in a course on digital education during last year, but still they seem to have gaps in digital skills. Specifically, teachers would like to improve their skills in using digital technologies to enhance inclusion, personalisation and learners' active engagement.

Related definitions from DigiCompEdu Framework:

Accessibility and inclusion. To ensure accessibility to learning resources and activities, for all learners, including those from disadvantaged backgrounds and vulnerable students.
Differentiation and personalisation. To use digital technologies to address learners' diverse learning needs, by allowing learners to advance at different levels and speeds, and to follow individual learning pathways and objectives.
Actively engaging learners. To use digital technologies to foster learners' active and creative engagement with a subject matter, such as civic education

7. **How can the skills of teachers for using digital tools to encourage inclusion, personalization and engagement of students be strengthened?**
8. **Why are there these gaps and needs among teachers in our country? What characteristics should a training course have to fill these gaps and meet the needs of teachers?**
   ** In case of a stakeholder that can also answer question 8 on a European level please adapt the question accordingly.*

Section 4: Development of effective digital learning environments for vulnerable students - Examples and good practices.

9. **Did you encounter some remarkable examples that you consider good practices in the use of digital education to enhance inclusion, personalisation and learners' active engagement? Focus on good practices on an institutional level and/ or good practices related to methodologies and teaching approaches and tools adopted (depending on the stakeholder).**

(Ask in case this topic has not emerged previously.)

10. **Can digital education be a means to reduce inequalities among students? What conditions must be met in order to do so? What practices do you think should be developed at an institutional level?**
11. **What do you consider good practices in the use of digital education for vulnerable students? Once again, focus on good practices on an institutional level and/ or good practices related to methodologies and teaching approaches and tools adopted (depending on the stakeholder).**

Closure.

☑ Thank them for their participation and ask for feedback and suggestions.
☑ Provide a description of project next steps (multiplier event, ..).

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