IO1. Virtual Schooling Toolkit for School leadership teams and teachers

Transnational Report

Contents

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Introduction to the project and Toolkit

Digital technologies are massively integrated into school curricula over the last decade, to provide seamless online learning experiences, overcoming physical barriers (OECD, 2019; EUA, 2019). During the eruption of COVID-19 pandemic, means of distance communication were imposed in every domain and the integration of digital technology was accelerated. As a result, educational organisations and institutions were forced to adopt online and distance learning practices to accommodate teaching and learning to fit the new context. Most schools across Europe, though, were asked to achieve such change overnight, without being ready or having strategic measures universally applied. In this context, a consortium of six (6) partners, from five (5) European countries, which cover a wide range of expertise, came together to implement a project that will meet the needs of European schools and their teachers, leadership teams, learning designers, educational technologists, support staff, students, and their parents. Specifically, the project "EUVHS: A framework for the design and implementation of European Virtual ScHoolS" aims to develop school leaders and teachers' capacities to design and deliver online education with improved digital skills and strategic actions in place. Following the directives of the European Commission and the respective Digital Education Action plan 2021-2027, the partnership will collaborate over a period of 24 months (01/05/2021- 30/04/2023) to deliver the following:

➢ **IO1: Virtual Schooling Toolkit for School leadership teams and teachers**. The aim of this deliverable is to design and develop a toolkit which will act as a powerful tool for schools and teachers and support them to adopt online education. The Toolkit consists of resources, pedagogical material, case studies, practical tips, and a collection of OERs activities that can be adapted and adopted to learn how to teach online in secondary education, with some recommendations for primary education.

➢ **IO2: Training Course for School Leadership Teams, Teachers, and Staff**. The aim of this deliverable is to design a training course for teachers and school leadership teams to prepare them to integrate online education in their practices. The focus will be on the basic elements they will need to be able to effectively design, develop and implement innovative and interactive online courses to secondary school students.

➢ **IO3: Training course for students on how to be effective online learners.** The aim of this deliverable is to design a course that will support high school students become effective online learners. Research shows that students do not necessarily know how to learn online. Therefore, they need training and support to be productive and learn online effectively. The partners will also prepare a simple checklist/self-assessment for online learners to allow them to reflect on their readiness to take online courses.

- ➢ **IO4: eLearning platform and OERs on Virtual Schooling.** The main objective of this deliverable is to provide an online space that will host the courses, OERs, and the Toolkit in an online format for those who wish to develop their skills in online education. Interested individuals can register, free of charge, without specific entrance prerequisites, attend the courses and learn through a self-paced mode.

Introduction to the report

Having in mind that all the deliverables of the EUVHS project should meet the needs of schools in partner countries and Europe, each partner reviewed their country's national literature about the state-of-the-art of virtual schooling while gathering target group's opinions through an online survey. The data collected from the national-based surveys were reviewed and analysed by each responsible partner. Then, a consolidated synthesis of the results followed, as a response, to compare the views of target audience, finding common and different issues that have emerged. These synthesised results are presented in the current transnational/cumulative report. The aim of the transnational report is to provide an overview of virtual schooling practices followed in the European Union and act as a foundation both for the first deliverable of the EUVHS project – a Toolkit with resources on how the target groups can adopt virtual schooling practices in secondary education - and consequently, all the deliverables.

The aim of the research was to investigate the challenges and barriers regarding online/remote teaching that national secondary schools face. This way, specific recommendations emerged through an examination of the state-of-the-art. To achieve this, the partnership followed a mixed methods approach. A mixed-methods research is beneficial to uncovering participants' reflections, opinions, and views through an evidence-based approach and a concrete image that might be limited if only one type of data was collected (Wisdom & Creswell, 2013). First, a systematic review of the literature, in each partner country, was implemented, so that parents can examine the current situation on a national level. Then, by identifying the categories that needed further investigation, the partnership constructed an online questionnaire that was delivered to national-based secondary school teachers, leaders, and designers and conducted focus groups with members of the target group. Through this, quantitative and qualitative data was collected by each partner country, to support the results collected from the review of the literature, to draw relevant conclusions. The target audience included teachers, support staff, school leaders, learning designers and educational technologists.

The report provides valuable insights into the different and common issues that all institutions have to overcome in terms of virtual schooling, as recorded through the mixed method research. Therefore, the paper consists of 2 chapters structured based on the research process as follows:

> ➢ **Chapter 1: Desk research.** The first section constitutes the pedagogical framework resulted from desk research on the state-of-the-art and the practices followed by secondary schools in partner countries. The consortium followed a systematic review of the literature to collect data related to curriculum alignment, continuous

evaluation, and monitoring, infrastructure needs and adaptations, teaching, learning, and assessment strategies, support measures for teachers, learners, and parents, privacy, well-being, and health issues. This resulted in a pedagogical framework as part of the final Toolkit.

➢ **Chapter 2: Evidence-based practices through online survey.** The second section includes the results from the online survey that consisted of questionnaires and focus groups, distributed, and conducted by each partner, respectively. On the one hand, the consortium distributed an online questionnaire to members of the target group, based on the thematic categories derived from the desk research. The total sample that filled in all the questionnaires were 184 individuals. On the other hand, the consortium held focus groups in their countries with a team of people that are the representatives of the target group, to record their experiences. In total, 33 individuals participated in the 5 focus groups that were carried out.

To ensure that the details of each partner can be easily contrasted with each other, the results of the online survey are presented separately based on the country from which they derive. The resources include recommendations and important remarks, emphasized in each case, along with specific action plans, studies, and policies followed. Below (Table 1) there is an overview of the number of people that participated in each part of the survey.

Table 1 Number of individuals that participated per partner country

	Focus Groups	Questionnaire
Germany	1 [6 participants]	45
Cyprus	1 [6 participants]	34
Italy	1 [3 participants]	50
Greece	1 [13 participants]	25
Ireland	1 [5 participants]	30
Overall	5 [33 participants]	184

Executive summary

Based on the results from the online survey implemented, all partner countries report that the biggest challenge of online learning is to provide all participants with access to appropriate and trustworthy equipment, digital tools, technical assistance, and Internet connection. Complementary to this, is the acquisition of digital skills to both use technology and create with it (teaching and learning actions) and the setup of a proper home/parental environment for smooth participation in online learning (e.g., a quiet place to study). To tackle such challenges and deliver effective virtual schooling programmes, the researchers highlight need to follow a systemic approach. This involves the collective development of an action plan based on a coherent legal framework. The plan can emphasise the areas of (digital) infrastructure, digital accessibility, measures of support, skills training and development, collaboration, redesign of curricula, as well as evaluation of the progress and implementation. In practical terms, the plan can cover specific actions in three aspects.

In terms of **Leadership**, we need to:

- raise awareness on the possibilities offered by digital learning and to stimulate a culture for the improvement of the quality of learning.
- align the virtual schooling learning programmes with the educational goals to be achieved.
- put in place measures for data protection and equity, to minimise the digital divide (e.g., incorporate assistive technologies, resources for special education, emotional support mechanisms).
- establish a coordination team of leaders, teachers, support staff, and parents. They will cater to the preparation, review, and evaluation of the programmes. Students' unions should also be promoted, so that their challenges are immediately spotted.
- promote communication and collaboration within and outside school with all key stakeholders: universities, research centers/teams, policymakers, businesses, NGOs, parents', and teachers' unions. Strong cooperation with funding agencies/organisations may tackle obstacles related to budget restrictions.
- implement strategies that support psychologically and emotionally all those engaged, with an emphasis on providing continual connection and activities that foster students' mental health (particularly required over extended periods of online learning).
- apply evaluation techniques to assess the success of online learning. This way, all practices can be revised accordingly, either during or after the implementation period (e.g., end of school year). Formative evaluation throughout the semesters

(e.g., informal discussions among leaders-teachers) is a crucial proactive measure. All key stakeholders need to be included in the reviewing process.

In terms of **Resources and Support,** we need to:
- provide adequate content, materials, devices, and tools that facilitate distance learning as well as training for students and staff. Upskilling and training should be relevant to the participants' needs with an emphasis on how to purposefully exploit technologies to transform learning and make it student-centered: authentic, collaborative, constructive, meaningful. For teachers' training, the TPACK model can act as a point of reference while online classroom management techniques should be taught and eventually adopted. It is worth mentioning that parents need guidance in terms of how to assist their students when learning from home.
- make sure that participants' well-being is promoted through the support of a team of experts (e.g., psychologists) and actions that cultivate appropriate usage of technologies.
- promote a community of practice among all participants (leaders, teachers, staff, students, parents/guardians) for an exchange of resources, ideas, and advice that will occur beyond the school boarders.

In terms of **Teaching and Learning**, we need to:
- (re)design curricula using modern methods as the backbone of teaching. Space is needed for the integration of inquiry-based learning, interdisciplinarity, personalisation, peer-to-peer feedback (mediated by the teacher, as needed) and self-reflection. It is crucial to promote individualisation to align the learning experience with students' particular needs. For this, the preparation and distribution of digital material and resources that will fit into the online context is paramount.
- design and develop specific activities to cultivate students' digital competence. For guidance, we can consult the DigComp framework developed by the European Commission, a tool aiming to build citizens' digital competence. Gradually, students' self-regulation of learning, when using technologies, will also be promoted.

Chapter 1: Desk research on the state of Virtual Schooling

By investigating and identifying best practices and challenging issues related to remote online teaching, the educational community can support the development of effective strategies (Kebritchi, Lipschuetz, & Santiague, 2017). In this context, the current report, explores the state-of-the-art in online teaching at secondary level schools in Germany, Italy, Greece, Ireland, and Cyprus. It unveils the practices, methods, and approaches followed, as well as the challenges that emerge during the design, implementation, and delivery of online learning in lower and upper secondary schools. The study is directed by the following research questions:

- **RQ1**: Which practices do secondary schools in the partner countries (Germany, Italy, Greece, Ireland, and Cyprus) follow during distance education?
- **RQ2**: Which challenges do secondary schools in the partner countries (Germany, Italy, Greece, Ireland, and Cyprus) face during distance education?

Through a systematic literature review, the research team provides answers to the above questions. As a result, the project's consortium will be better prepared to design appropriate material, resources, guidelines, and recommendations that will respond to the needs of school leaders, teachers, instructional designers, learners, and parents. For research purposes, the partnership accessed and examined various e-databases, such as the Science Direct, ERIC, IEEE Xplore Digital Library, SCOPUS, and Academic Search Ultimate. The keywords used for the research were the following: *distance education, online learning, secondary education, strategies, teaching methods, evaluation, [partner country]*. To limit the results and choose the appropriate studies, the partners applied the following inclusion criteria:
- The articles should be published between the 2010-2021 period.
- Full access to the text should be granted.
- The articles should be published in journals and/or proceedings.
- The content should fall into the topic of online education at secondary schools.
- The articles should be written in English and/or national languages or translated into one of these two languages.

Based on the above criteria, the appropriate research papers were gathered and through a content analysis the following specific sub-categories emerged:
a. Strategic plan
b. Infrastructure needs and adaptations
c. Teaching, learning, and assessment strategies

d. Support for teachers, learners, and parents
e. Privacy, well-being, and health

1.1 Strategic plan

From the literature review conducted all partner countries report the importance of having a **digital action plan and strategy**. Italy, compared to the other European and OECD countries, has had in the last 20 years a gap in the digital skills of the population including teachers and students (TALIS 2019) and a delay in the digital transformation in schools. Among EU countries, Italy ranks 25th for digital readiness of the population underlying the substantial gap existing in digital skills and knowledge (CEPS, 2019). Nevertheless, with a process started in the early 2000s and thanks to the recently introduced Piano Nazionale Scuola Digitale (National Plan Digital School - PNSD)[1] and Linee guida per la Didattica Digitale Integrata (Guidelines for Integrated Digital Education), Italy is making important steps toward a quality and effective digital education regarding curriculum alignment and infrastructures. The PNSDs[2] proposed a series of objectives (without a specific timeframe) that constitute the strategy for digital schools:

- to equip all secondary schools with broadband connection and digital tools (computer and LIM board)
- to create open and inclusive digital spaces
- to create for every individual (school leaders, teachers, and students) a digital identity to facilitate their interaction with digital education
- to train students on digital literacy and information literacy
- to stimulate and give value to the creation and promotion of digital contents by the research centres, the schools, teachers and students
- to train and equip with valuable skills and knowledge school leaders, teachers and school personnel and enable them to make use of digital innovation and be independent users.

Every Region, Province and school has to adapt the Plan to its needs and implement a series of activities to reach the Plan objectives. To retrieve these data (number of digital tools in schools and the actions toward curriculum alignment in schools) is arduous because there is no public database, and some schools did not publish their data (Openpolis, 2021). On a national level, prior the pandemic, there has been a substantial investment for equipping all grades schools with the digital board (LIM). Currently, secondary schools in Italy are those with the lowest number of LIM boards compared to primary schools (Openpolis, 2021). The number of laptops and tablets every 100 students is currently 5,7. Prior to the pandemic,

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[1] The first National Plan Digital School has been drafted in 2007 and has been constantly updated until the last one developed in 2015 with the latest school reform La Buona Scuola (introduced with Law 107/2015)

[2] The first PNSD (2007-2012) measures were more focused on infrastructural interventions with the introduction of LIM boards and other digital devices. With the PNSD of 2015, the focus is also on digital skills, innovative teaching methods and teachers training.

only one school out of ten had access to broadband connection (Mantellini, 2020) constituting an infrastructural barrier to digital schools. Currently, with an unprecedented agreement between private companies and the government, the Piano Scuola[3] (Schools Plan) aims at equipping all schools with broadband connection. What is still needed, is a clear strategy and direction for the digital assessment of competences and the continuous evaluation and support of teachers and students on digital education (European Commission/EACEA/Eurydice, 2019).

Similarly, in **Ireland**, under the current organisation of second-level schools, evidence suggests there has been limited opportunity for the widespread integration of ICT into classrooms. There are no formal requirements on schools to report the main approaches they take in relation to digital technologies in the classroom; schools with little technology integration, those using blended learning and schools which describe themselves as 'tech-driven' are free to operate without having to provide feedback to the Department of Education. In 2015, the Irish Government launched the Digital Strategy for Schools which set out a clear vision that focused on realising the potential of digital technologies to transform the learning experiences of students by helping them become engaged thinkers, active learners, knowledge constructors and global citizens who participate fully in society and the economy. The strategy had a core pedagogical focus, with emphasis placed on introducing ICT as a standalone course as part of the Leaving Certificate (Ireland's terminal upper second-level examination). The strategy promoted the integration of e-portfolios at both primary and secondary level in addition to the development of useful digital content and resources to schools. The initiative also emphasised the promotion of safe and responsible internet use, alongside the provision of resources dealing with the issue of cyberbullying. More importantly, the strategy had as a core commitment the inclusion of ICT skill development as embedded components in Initial Teacher Education Programmes and Continuing Professional Development for established teachers. This is particularly important given that teacher skills and confidence in the effective pedagogical use of technology have been identified as key barriers in embedding technology in teaching and learning.

As reported from findings in **Germany**, the country is backward in digitisation of the education sector because digital technology in the classroom is a highly controversial topic - the use of computers in the classroom is discussed in the society. This is based, among other things, on studies from brain research that show that computers in schools lead to lower performance and promote dependency (Spitzer, 2012 in Kerres, 2020). Some schools even

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[3] The Piano Scuola (School Plan) is a measure adopted by the Ministry of Education to cope with the emergency of COVID-19 and its effects on schools and school system. To read the plan visit
https://www.miur.gov.it/documents/20182/0/Piano+Scuola+21_22.pdf

successfully advertise themselves as non-digital schools that don't support any technical advice.

Combining the above with evidence from **Greece and Cyprus**, we report that a systemic approach should include the collective development of an action plan for the implementation of online learning, based on an appropriate legal framework (Nisiforou et al., 2021). This plan involves monitoring, reviewing, and evaluating the processes followed across all stages. Specifically in terms of the curricula, we should ensure that they are aligned with the possibilities and restrictions of distance education. For instance, the content and the materials must be delivered in suitable formats (Nisiforou et al., 2021) while being friendly to the online environment (Sofianidis et al., 2021). Therefore, a suggested methodology's pedagogical design should involve aspects of instructional, technological, organisational, assessment design and financial planning (Anastasiades, et al., 2010), using a systematic approach for teaching effective online educational programs. Additionally, evaluation should be included. For this we can follow the Italian example: the Ministry of Education has promoted the pilot action of SELFIE ITALIA, the Italian adaptation of the SELFIE tool promoted and coordinated by the European Commission. In 2017, through SELFIE ITALIA piloting, nearly 32000 school leaders, teachers and students have tested their digital competences. The piloting has been a success and the Provincia Autonoma di Trento (Autonomous Province of Trento) has included the SELFIE tool as a priority in implementing the PNSD.

1.2 Infrastructure needs and adaptations

Even though widespread use of digital platforms and other technology-rich activities can compensate for the lack of face-to-face teaching, access to the essential digital equipment and materials is required. From the emergency remote teaching period, it seems that secondary education students coming from stable financial background (e.g., middle to upper class families), benefit from high-speed internet, adequate tools/devices, and a proper, quiet place to study at home (Tzimopoulos, Provelengios, & Iosifidou, 2021). Sofianidis et al., 2021). As a result, they are in an advantageous position to have more successful learning experiences. On the other hand, many students do not have access to reliable devices and software/communication tools. When implementing virtual educational programmes, though, we should ensure accessibility is provided to all those involved, including students, teachers, parents, policymakers, and leaders (Nisiforou et al., 2021), no matter their financial and social status. As a result, academics have focused heavily on the significance of getting sufficient and dependable tools to assist virtual learning. This requires a stable connection to the internet to allow equality of opportunity, and also continuous technical assistance. For instance, in Italy, in the Piano Scuola, there is an investment for the equipment of personal devices for students. All low-income families can have access to vouchers for the purchasing of digital devices for virtual schooling. In some schools, in particular VET secondary schools, digital education is, on the other hand, more integrated in teaching and learning and therefore more connected to the labour market. This has been possible thanks to the equipment of specific machines, laboratories, and 3D printers. Reviewing existing projects that have been realised in secondary schools, there is a common element beside the digital apparatus, that is the level of knowledge, skills and vision of school leaders, teachers, and students.

1.3 Teaching, learning, and assessment strategies

In virtual education, the learning experience should be designed to fit the capabilities and barriers of the online context. Given that participation in virtual learning is technology-mediated and there is a lack of physical interaction, we should foster learners' participation, engagement, and overall motivation. In the study of Sofianidis et al. (2021), it is highlighted that when teaching is focused on lecturing and there is lack of student-to-student cooperation, discussion, and interaction, students might be unable to concentrate over a long period of time. To avoid the application of such traditional, teacher-centered methodologies, teachers must be properly prepared to teach virtually, exploiting online pedagogies (Sofianidis et al., 2021). Examples of modern and innovative pedagogies include

group work, simulations, online games, online laboratories, personalised, differentiated, and adaptive instruction (Sofianidis et al., 2021). The available digital media and tools promote direct, synchronous, and asynchronous exchanges between teacher and student (Zawacki-Richter, 2020) and provide a different form of learning with a variation of materials from self-directive, cooperative, interactive to problem-based (Zawacki- Richter, 2020). For instance, during the emergency remote teaching period, the Greek Ministry of Education launched digital hardware and software such as Interactive School Books (http://ebooks.edu.gr/new/), the Fotodentro collection (http://photodentro.edu.gr/aggregator/), the learning scenario platform Aesop (http://aesop.iep.edu.gr/), Education Television shows (http://www.edutv.gr/), and the free Digital Library (https://www.ebooks4greeks.gr/). Moreover, E-learning clips had been posted to the sites, so users could access the e-courses whenever they want. For e-learning lessons, the digital platforms e-class and e-me were used, and learners attended Open Courses offered by their professors on each website. (Papazoglou & Koutouzis, 2020). In any case, all actions should promote the establishment and maintenance of an online learning community.

There are several strategies and resources that secondary school teachers can make use of. We can investigate the following example from Italy. The Regione Trentino, has been proposed for the training of teachers in digital skills and digital education to adopt a peer learning strategy, following the method of open innovation, where the already skilled teachers and technicians instruct the other teachers (Ufficio Innovazione e Informatica - Servizio Istruzione e Formazione del secondo grado, Università e Ricerca della Provincia Autonoma di Trento, 2017). RAI – Radiotelevisione Italiana (Italian Public National TV) has developed and make freely accessible to teachers and students' digital educational contents where they can learn and improve digital skills. Additionally, Liceo Scientifico Statale S.Cannizzaro in Palermo has developed a website to inform and train teachers in digital education. Another important bottom-up initiative called Metodologie Didattiche (Teaching Methods) developed by the NGO Impara Digitale with a group of teachers, collects a number of methodologies used in schools for digital education. These methodologies are explained through simple videos and presentations through which teachers can train themselves. Some of the methodologies identified are:

- Circle time (to manage conflicts);
- Cooperative learning (to co-create knowledge);
- Episodi di Apprendimento Situato (Situated Learning – EAS);
- Flipped classroom (participative lessons and evaluation methodology);
- Scuola scomposta (Decostructed school).

Episodi di Apprendimento Situato has been developed in 2014 in Italy and is based on the principle of the Flipped Classroom. The teacher, through a planned process, guides the students to cooperate to develop digital contents while deepening the specific teaching subject. **Scuola Scomposta** is a teaching method where students are at the centre of the learning process that is tailored to their skills and desires. The classroom is restructured in a welcoming and not judging environment where students naturally participate and show their curiosity, sustaining their wellbeing. Episodi di Apprendimento Situato and Scuola scomposta are practical examples on how digital education reshape the relationship among teachers and learners. Teachers become facilitators of knowledge, assisting students in the creation of their personal learning path (Scarinci, 2020). Another novelty in the Italian scenario is the provision of a new figure in secondary schools, the Animatore Digitale (Digital Animator). Every school will have a Digital Animator, identified among particularly skilled teachers and technicians that is the focal point for the implementation of PNSD in the schools and for the training of teachers.

It is worth mentioning that alternative forms of assessment should be present (e.g., self- and peer-assessment, rubrics, portfolios) along with immediate feedback, to strengthen students' online participation (Sofianidis, et al., 2021). Effective digital education should integrate the assessment of competences through digital means, since digital education has the potential to change and improve the traditional ex-ante assessment of competences based on tests and grades. As reported, students that have been assessed through learning-oriented assessment with flipped classroom and collaborative learning methodologies, seem more proactive and autonomous in distance learning (INDIRE, 2020). This testifies the fact that changing the way of assessment in digital education, can change the way of learning and making use of digital tools. With the development of the digital education methodologies, as the ones presented above, there will be a subsequent shift in the assessment of competences since these methodologies are already encompassing learning-oriented assessment.

1.4 Support for teachers, learners, and parents

Since online education requires the selection and integration of digital tools to accomplish the pedagogical purposes, teachers' support is crucial. The support can have the form of both pre-service and in-service training (Sofianidis et al., 2021). Evagorou and Nisiforou (2020) pinpoint that the pre-service teachers need to learn how to use effective online teaching methodologies during their initial training. This is particularly crucial for STEM courses that should promote the application of inquiry-based approaches, experimentation, and reflection (Evagorou & Nisiforou. 2020). In addition to that, preparation programmes should provide ample opportunities for engagement with online training and digital technologies. This way, teachers will learn how to teach online by becoming online students themselves, experiencing firsthand both the effective and the most challenging scenarios of online education.

Based on lessons learned from the remote teaching period during the COVID-19, there is a major concern about teachers' skills and familiarity toward the integration and use of eLearning tools that support the transition to an online environment (Sofianidis et al., 2021). Lack of digital skills can have a negative impact on the learners' attitudes toward online learning and its effectiveness. Recognising the fact that the school has the duty to foster students' digital skills and that the world is moving toward digitalisation, digital skills for education[4] are included among the trainings that teachers can follow. Thus, as Nisiforou et al. (2021) propose, teacher training in virtual, online education should be compulsory. For instance, in the Linee guida per la Didattica Digitale Integrata of 2020 (Guidelines for Integrated Digital Education), in Italy, there is clearly stated that teachers have to acquire knowledge on digital education in order to effectively perform virtual learning and blended learning (MIUR, 2020). At present, teachers can acquire these skills and improve their teaching methodologies through training courses organised by their schools, through online and in presence training delivered by private institutions[5], and from 2018 in one of the newly constituted Future Labs. The Future Labs are 28 training centres located in all 20 Italian regions where teachers can freely be trained and have practical experience on digital education. The curriculum developed in the Future Labs adapts and follows the DigiCompEdu framework and levels (MIUR, 2020). Therefore, the topics are extremely varied, focusing on Artificial Intelligence, use of Apps and tools in digital education, e-Learning platforms, and digital citizenship (MIUR, 2020). Following the DigiCompEdu framework, school leaders and teachers, thanks to the proposed training, can self-assess their level of competence and knowledge. In this sense, the content of the training should explore both

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[5] Piano per la Formazione dei Docenti 2016-2019 (Plan for Teachers Training 2016-2019)

technological (e.g., tools, technical issues, etc.) and pedagogical dimensions (e.g., approaches, resources, etc.), including methodologies of online teaching. Additional emphasis should be given on the development of teachers' digital competences.

The format of professional development training could have various forms. Vrasidas and Solomou (2013) explored the capabilities of online games for in-service teacher training. Both the affordances and challenges are highlighted in the specific study. As far as the affordances are concerned, online games have potential in increasing participants' interest to actively engage. Additionally, interaction and collaboration should be present, for the participants to give and receive feedback. Lastly, authenticity of the material is of utmost importance, so that teachers can exchange concerns, thoughts, and find solutions to real-life problems. In the same context, authentic learning can include role-play and, overall, student-centered activities with the guidance of the trainer. However, it is crucial for the participants to possess the necessary skills when they interact with the digital content of training, so that they can use the time wisely, to engage with the content rather than the navigation process. Also, the simplicity of training, the provision of adequate time and resources seem good practices that can prevent displeasure from arising. Thus, the researchers conclude that changing the school practices requires changing the nature of teacher training, through a collaborative approach that unites researchers, teachers, trainers, and designers to promote review and reflection.

Other than explicit training, though, it is significant to enhance the collaboration among teachers. It is worth mentioning that teachers' participation in communities of practice, to co-design and share learning material, teaching methods, and best practices with each other can facilitate the implementation of online teaching (Nisiforou et al., 2021). In research conducted by Kosmas (2017) it is shown that teachers participating in online communities of practice favour sharing teaching material with each other. Most teachers are motivated to engage with such practice due to the possibility of finding educational content prepared by other teachers or sharing what they have designed on their own. This on-the job aid is beneficial to teachers and serves as a method of indirect professional development to improve their teaching methods.

Apart from teachers, support should also be provided to parents and learners. In many secondary schools apart from VET schools, there is no provision for mandatory hours of digital literacy or education (European Commission/EACEA/Eurydice, 2019). It is crucial to provide students with digital literacy education and with specific training on the threats of the internet such as cyber bullying. Such is the case in Italy where the Ministry of Education (MIUR) has recently launched a program "Educazione all'uso del digitale per un consumo consapevole e sostenibile" (Training on the sustainable and conscious use of digital tools) in every secondary school through which students and teachers are trained on the responsible

use of the internet and digital tools. As Nisiforou, et al. (2021) report, schools are responsible for facilitating an ongoing communication with learners and parents at home. This way, we bridge the gap that emerges from physical distancing. Furthermore, communication and collaboration should exist between the education community and the authorities, such as the Ministry of Education. This kind of interaction constantly provides insights into the current state and situation that learners, teachers, and parents are experiencing (Sofianidis et al., 2021). As a result, there are opportunities to eliminate obstacles related to lack of digital skills (e.g., provide relevant training), infrastructure, and (social) inequalities.

1.5 Privacy, well-being, and health

In many countries a problem related to data protection has arisen. In Germany, teachers are simply not allowed to use some platforms or services for their lessons (Kerres, 2020). By the law of the European data protection regulations, it is not allowed to use software that was not developed in the EU. Therefore, international programs/software that require the uploading of data and do not meet EU standards for privacy, data protection and data is not allowed to be used (Kerres, 2020). The exclusion of foreign technologies therefore means that schools cannot draw on programs that have already been positively tested, such as those that have been used for years in Australia or the USA. The fact that the digital form of teaching is in the starting blocks within Europe means that modifications and expansions are needed. In general, data security is a major issue in Germany, as evidenced historically by recent regimes of surveillance using data mining. The misuse of data is therefore not an imaginary danger for many Germans, but a real experience especially in the older generation (Kerres, 2020). Additionally, the use of technology along with the absence of physical interaction highlight the importance of tackling issues of emotional health. Sofianidis et al. mention that students are concerned about the lack of socialisation with their classmates and the lack of human contact during online learning, as seen from the school shutdowns due to COVID-19 (Sofianidis et al., 2020). We should ensure that specific measures are taken for the provision of psychological support such as services inside and outside school. Additionally, teachers should be trained on how to spot mental health issues such as any signs of stress that students may experience (Sofianidis et al., 2020). This way they can develop actions that foster mental health across the student and educational community. According to Nisiforou et al. (2021) the strategic plans should focus on schools' social dimension, strengthening its connection with the society.

Chapter 2: Evidence-based practices through online survey

To further examine the state-of-the-art, the practices, and challenges of Higher Education Institutions in the partner countries, the consortium followed a mixed methods research approach, to collect quantitative and qualitative data. The survey was implemented between May and September 2021. Regarding the first part of the survey, the partners constructed an online questionnaire, based on the literature review and the topics emerged. There were 27 questions which gathered data about the demographic profile of the participants and their opinions/knowledge about the state of leadership and infrastructure, collaboration & professional development processes, the teaching and learning practices as well as the profile of students, in terms of their digital skills (see Annex 1). Along with that, challenges/barriers faced by the participants were also collected. The questions were written in both nominal and Likert-type scales, the former used to measure which types of practices are followed and which challenges exist while the latter used to measure the frequency of online teaching practices, tools, and resources integrated. The questionnaire targeted school leaders, teachers of any subjects, learning designers and developers and support staff in secondary schools. In total 184 individuals completed the questionnaire. The partners analysed the data using MS Excel and/or IBM SPSS Statistics 25, finding the frequency of answers and the percentages, depending on the type of scale of each question.

Then, for more insights into the context of online/distance education in the partner countries, the partnership conducted focus groups to collect qualitative data and support the quantitative results. The focus group followed the form of a semi-structured interview with 10 – 12 questions covering various areas that constitute the field of distance education: leadership, infrastructure, collaboration and networking, online teaching and assessment practices, continuous professional development, and digital competence (see Annex 2). The average duration of each focus group was 30-40 minutes and included a group of six (6) participants-representatives of the target group. The focus groups were implemented between July and September 2021, either online, with the support of web conferencing tools such as ZOOM, Skype, or Google Meet or in-person. Throughout the survey, the partnership complied with the GDPR regulations, asking for the respondents' written permission for participation and recording of the focus group sessions (see Annex 3). Ethical issues were considered; anonymity, confidentiality, and objectivity were maintained.

2.1 Germany

2.1.1 Results from the questionnaire

2.1.1.1 Profile of the participants

The online survey was completed by a total of 45 people. Based on their profile (Table 1), these included a total of 13 men and 32 women. Most respondents (18) were more than 55 years old, but all respondents worked at a public school, mostly (f=31) at secondary level. 26 participants had a university degree and half of the sample (52.2%) worked more than 15 years in the profession (Fig. 1). The participants were teaching in a variety of subjects during this school year.

Table 2. Description of the participants' job position, grades in which they were teaching and highest degrees acquired

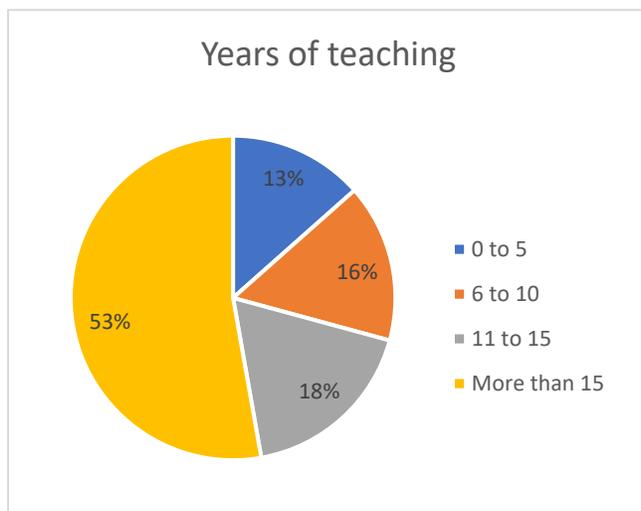| Job position	N	Frequency
Teaching	45	41
Administration	45	1
eLearning development	45	1
Grade teaching most hours		
Lower secondary level	45	31
Upper secondary level	45	13
Highest degree of formal education		
Professional diploma	45	4
Bachelor	45	26
Master	45	19
Doctorate	45	-
Post-Doctoral	45	-

Figure 1. Participants' years of teaching experience
in percentage

2.1.1.2 Main Findings

Regarding leadership practices 67.4% answered responded that there was a strategic plan for the integration of digital technologies in the school, 19.6% disagreed, and 13.0% didn't know if there is any integration of digital technologies. This finding evidently contradicts similar results from the literature. In response to the question, if teachers, learning designers and leaders work together to review the progress of online teaching and learning 52.2% agreed, 39.1% disagreed and 8.7% didn't know the answer.

As far as infrastructure is concerned, 43.5% of the respondents stated that their school had adequate equipment (digital tools) to facilitate online learning while 56.5% stated that it had not. Moreover, the majority (73.9%) answered that technical support was available in case of problems with digital technologies, but a small portion (21.7%) still didn't have access to such support.

The majority (62.2%) of the participants agreed that there were data protection systems, in place while 28.9% didn't have such information to answer the question. A small percentage of 8,9% reported absence of protection systems. For most respondents (87%) there were measures to provide all learners with access to online learning, while according to some (10.9%), the students didn't have access to online learning at all. Only 2.2% could not answer the question. The following measures for online access for all learners are existing according to the survey (Fig. 2):

- school- owned and managed portable devices for students to use (32%)
- school- owned and manage portable devices that students can take home (29.5%)
- training on how to use digital technologies (20.5%)

The existence of assistive technologies for students in need of special financial aid was reported at the same degree (8.2%). However, only 0.8% mentioned the provision of psychological support.
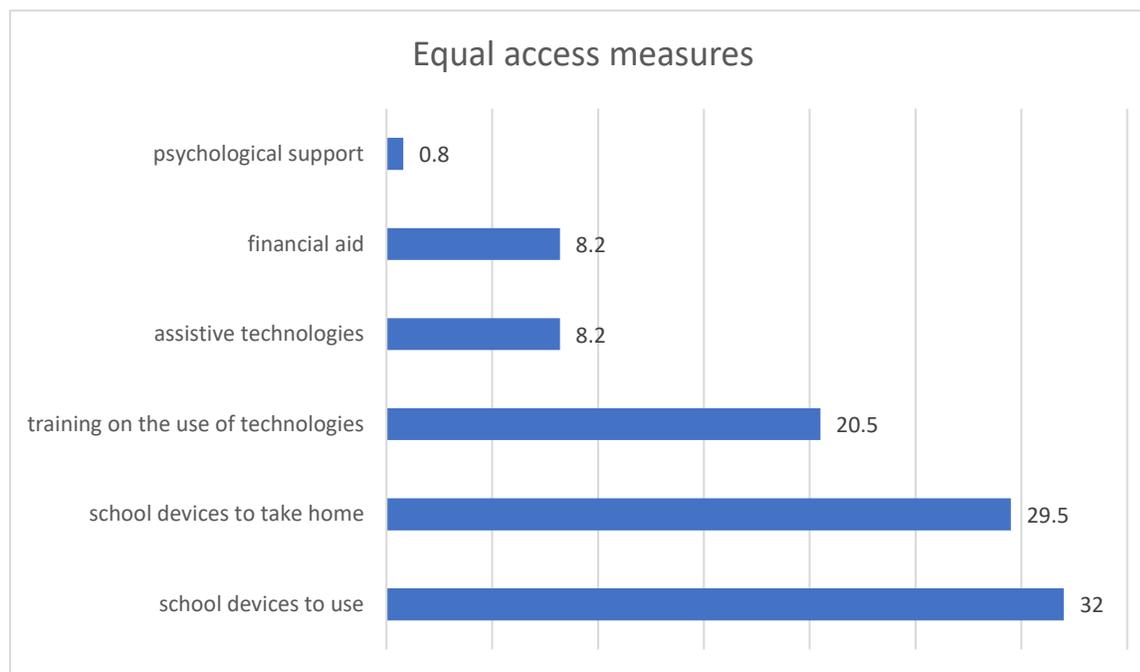

Figure 2. Percentages of the types of measures for equal access to distance education

In terms of collaboration and professional development the following data intended to provide insights into the state of the art in Germany. First, 87% agreed, that there is an online platform that all participants (School staff, parents, students) use for school- related communication. 10.9%, though, didn't have this kind of platform and 2.2% didn't know if such platform existed. In 66% of the cases, there was no partnership with other schools or organisations to support the use of digital technologies. Only 2.1% had this kind of partnership and 31.9% didn't know if this was followed in their institution. Second, 60.9% of the respondents had opportunities for continuous professional development in online/remote teaching. 26.1% didn't have this opportunity and 13% didn't know if this was offered to them. The offered professional training had the format of (Fig. 3):
- online courses, webinars, or conferences (25.3%).
- learning from other colleagues (teachers/ support staff) within the school through online or offline collaboration (26.3%)
- in-house training sessions organised by the school (e.g., workshops by the ICT Coordinator or observing colleagues teaching) (20%)
- face-to-face courses, seminars, or conferences (18.9%)

A small percentage of 5.3% were learning from colleagues through online teachers' networks or communities of practice and 3.2% got an inhouse mentoring or coaching as part of a formal school arrangement. No one of those surveyed mentioned the provision of study visits in other schools or accredited programmes.

Professional development opportunities

Category	Value
Accredited courses	0
Study visits	0
In-house training sessions	20
In-house mentoring/coaching	3.2
Online commuities of practice	5.3
Learning from colleagues	26.3
Online training courses, seminars, conferences	5.3
Face-to-face courses, seminars, conferences	18.9

Figure. 3 Percentages of the types of professional development opportunities provided

Regarding teaching and learning practices, most (60%) answered that teachers didn't have time to explore how to improve their online teaching. The most prominent teaching approaches integrated (Fig. 4) were the following:
- traditional/direct instruction (27.6%)
- collaborative learning (16.6%)
- formative assessment (11.9).

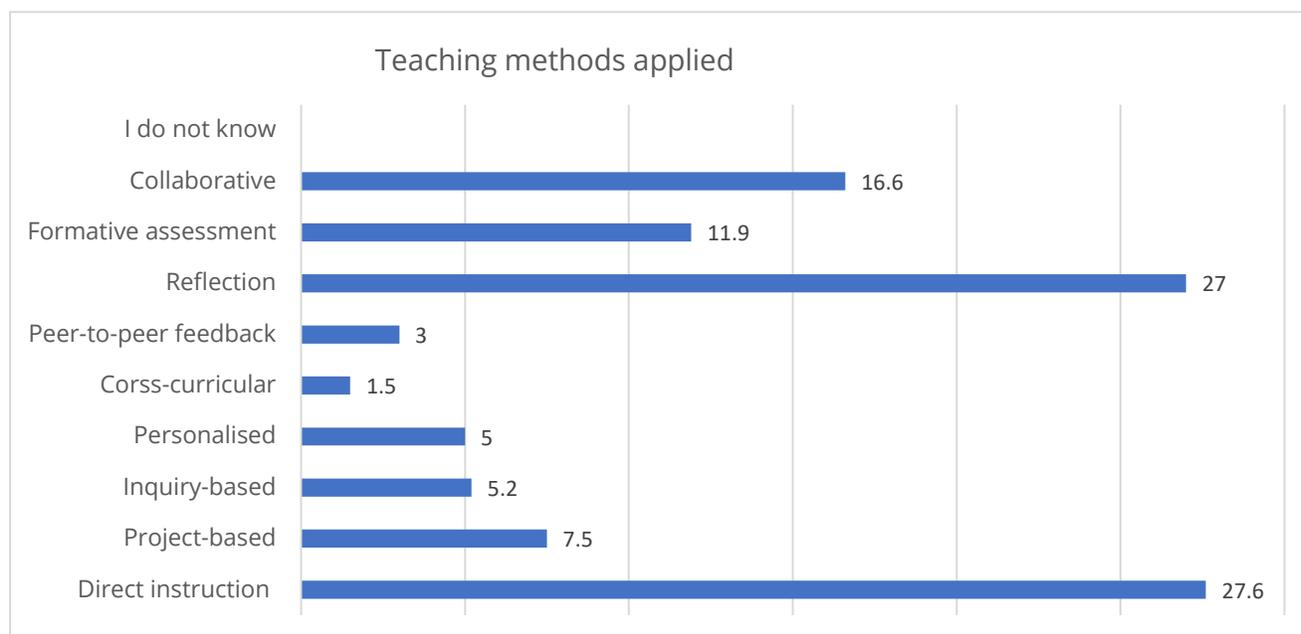Small percentages reported the application of other modern approaches.

Figure 4. Percentages of the types of teaching methods the participants used

When it comes to resources that are used for the online teaching and learning, the most common ones were the ones below (Fig. 5):

- learning management system (17.2%)
- web conferencing tools (18.2%)
- audio/ video material (14.3%)
- word prosessors (13.8%) and digital presentations (11.3%).

Less used resources were the ready- made digital resources (7.9%), the online collaborative tools (6,9%) and the creation of digital resources (2.5%). The learning analytics and digital data, the OERs and ready- made digital resources for special needs learners were used at the same extent (1.5%). A small percentage mentioned the integration of resources for personalisation, either using or creating ready- made digital resources (0.5%) or the provision for special needs students creating relevant digital resources (1%).

Tech tools & Resources

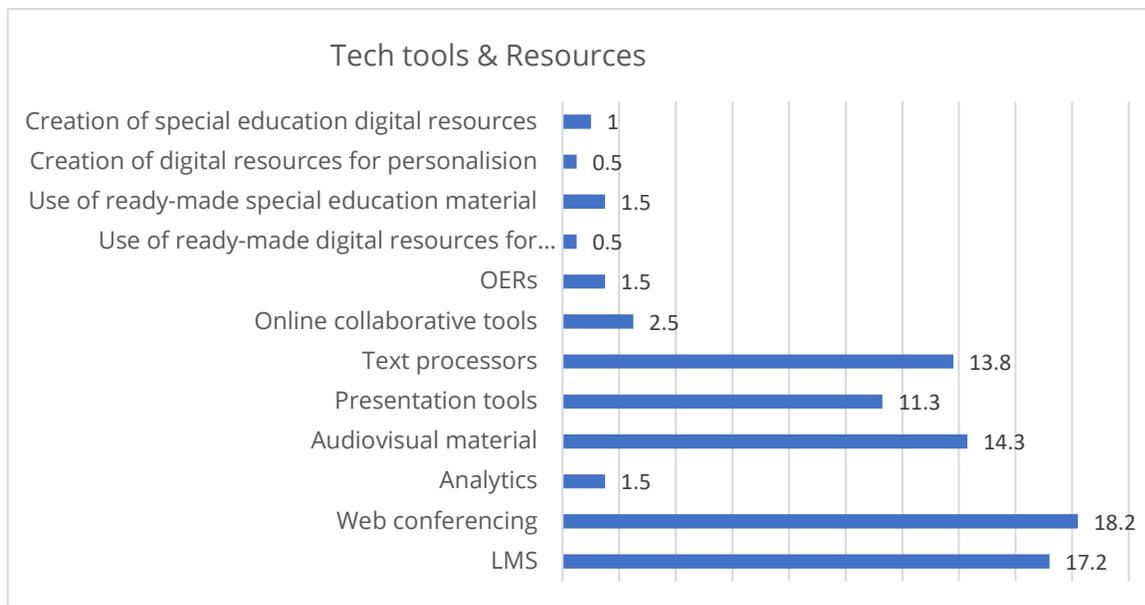| Category	Value
Creation of special education digital resources	1
Creation of digital resources for personalision	0.5
Use of ready-made special education material	1.5
Use of ready-made digital resources for…	0.5
OERs	1.5
Online collaborative tools	2.5
Text processors	13.8
Presentation tools	11.3
Audiovisual material	14.3
Analytics	1.5
Web conferencing	18.2
LMS	17.2

Figure 5. Percentages of the types of tools/resources and content-creation approaches the participants followed

When examining the students' profile, it seems that in 68,9% of the cases, there were learning activities that allowed them to develop their digital skills. The rest reported that either there was no such offer (15.6%) or were unaware of this (15.6). These learning activities included mostly training on (Fig. 6):

- how to behave responsibly and respect others online (20.5%)
- how to behave safely online (18.1%)
- how to protect the devices and how to communicate (13.4%).

Activities on how to check that the online information is reliable and accurate and how to create digital content were incorporated approximately at the same degree (11%). A small percentage referred to training on how to use other's work they find online (7.1%), or how to solve technical problems when using technology (2.4%). It is worth mentioning that the students are not taught how to develop digital skills across subject areas.
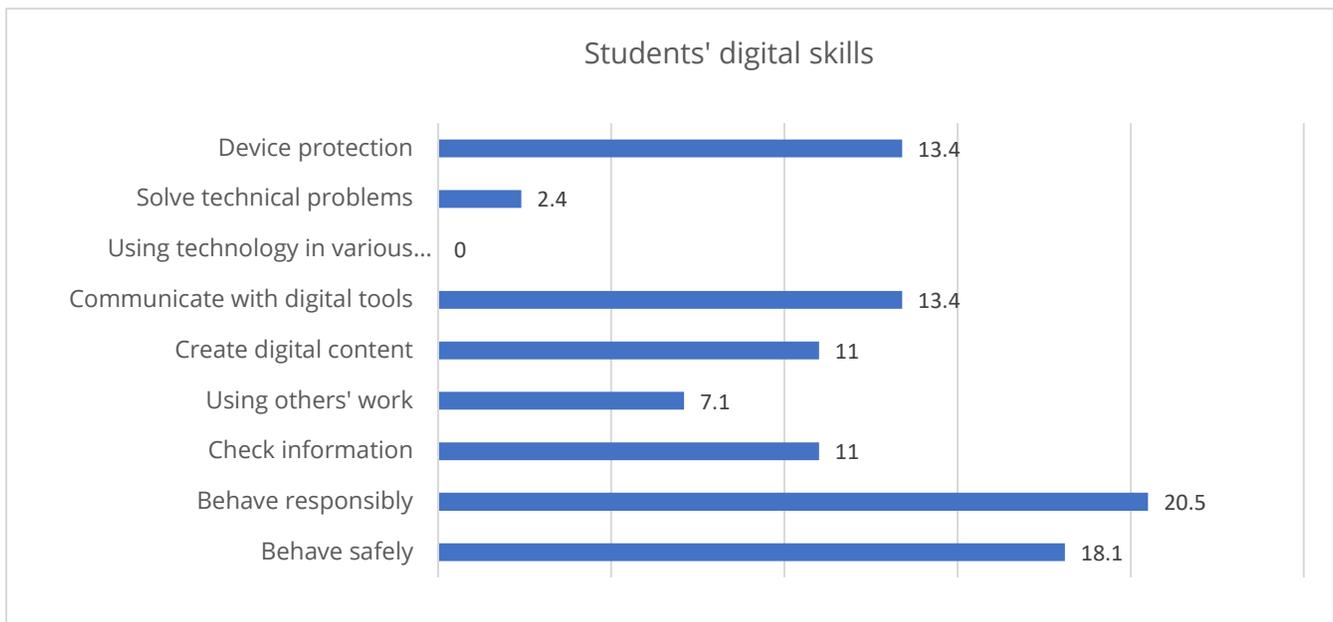
Figure 6. Percentages of the types of digital skills developed

The biggest challenges that were faced during online teaching and learning (Fig. 7) were related to insufficient internet bandwidth or speed (15.1%), lack of skills in using digital tools and preparing online lessons (11.2%). Additional challenges were the insufficient technical support and administrative organisation as well as the inadequate devices (approx. 10%). Other less common but existing to mention challenges were the lack of adequate training/professional development (9.2%), the lack of digital content to use for online teaching (6.4%), and difficulties in managing an online class (5.6%).
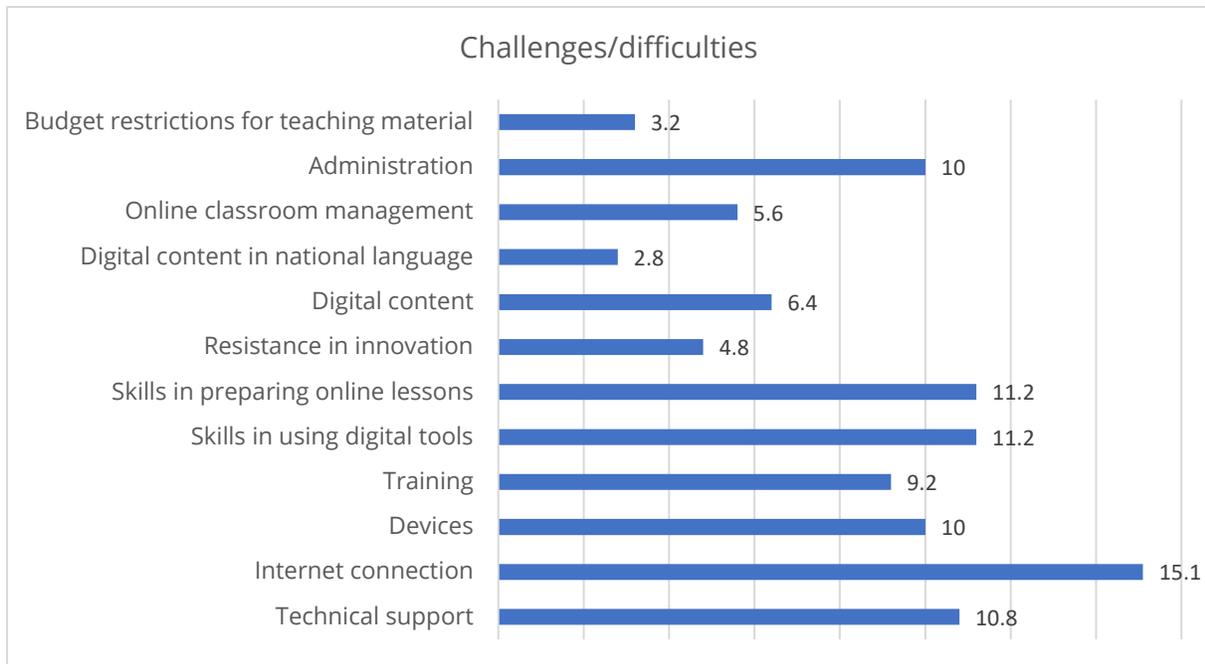
Figure 7. Percentages of the types of challenges/difficulties participants faced

2.1.2 Results from the focus group

2.1.2.1. Profile of the participants

Regarding the interviews, it should be mentioned that the six (6) interviewees (school teachers) did not agree to be recorded. They were mainly concerned that their sayings during the discussion would be used against them. Especially since they were mostly critical, and one interviewee even said that she was thinking about changing jobs because she was desperate and felt helpless about the current situation at her school. Overall, the attitude and concern regarding the statements pointed out that there were clear deficits and weaknesses in the school system about digitisation.

2.1.2.2. Main Findings

To analyse the qualitative data, the partners revealed the hidden patterns of the focus group. Two main (2) categories were extensively discussed covering three (3) and four (4) themes each. (Table)

Table 3 Categories and themes from the data analysis

Categories	Themes
Teachers' responses	Main challenges
	Infrastructure and equipment
	Communication and networking
	Measures for access and data protection
	Teaching and learning methods
	Assessment methods
	Evaluation of online learning
	Professional development and support
	Suggestions for improvement
Principals and leadership teams' responses	Strategic plan
	Collaboration and networking
	Support to participants

a) Teachers' responses

Main challenges
The teacher participants were asked which challenges they faced when it comes to online teaching. They mentioned that the lessons were less interactive, the teachers had just little control over individual learning processes (you can't go around and support during the working phase), the internet connection was limited, there was lack of technical equipment on behalf of the pupils as well as lack of relevant knowledge from the teachers. Beyond that, online classes had no time limit which means online schooling was much more time intensive and extra workload for the teachers was added to their free time. The focus group mentioned that there were subject specific challenges as well. For instance, there were concerns about the ways a teacher can prove that the students really speak the foreign language while they are in teamwork. Generally, there were difficulties in assessment and evaluation. As the focus group reported, due to the bad internet connection the students had their cameras turned off via video and they were participating using only audio during the synchronous the online classroom. Some pupils used this as an excuse to disappear and they were no longer reachable by the teachers. Especially the students with a weak socially parental home were suffering from this as they had no parents who assisted after them during homeschooling.

Infrastructure and equipment
When asked whether their school had adequate infrastructure to facilitate online education and if the infrastructure was reliable all members of the focus group mentioned that the infrastructure due to the corona pandemic had been intensified and improved. In one of the schools, they had recently been equipped with a fiber optic connection, complete cabling with at least 4 LAN sockets per room, modern network management (LMC) with 18 centrally managed switches, almost comprehensive WLAN (for teachers, limited for students), approximate 100 student laptops, 40 tablets and after the fall vacations all classrooms and course rooms would be equipped with an interactive touch board. Another person from the focus group responded that the technical support staff was available in their school, but the internet connection was unreliable, a problem that other interviewees mentioned, too. Another one said that resources for material to use were not available, but the institution had been working on a media curriculum to be used in teaching.

Communication and networking
In terms of the school- related communication among teachers, students and parents during online/ remote teaching, the participants stated that there was a fluent exchange and

communication in most of the cases. One school was using nextcloud, rocket.chat, schul.cloud and gotomeeting tools, in addition to common methods such as the email and phone calls. Others, though, used only emails and phone calls for communication. Sometimes digital devices such as zoom conferences or chatting function in clouds are used. The most useful types of digital technologies for communication, teaching and learning online were, according to the focus group, nextcloud, padlet, zoom and moodle. Moodle for example was used for the learning tasks and provision of feedback during homeschooling by one institution. Moreover, the cloud- network was a positive service for teaching in an online classroom with a group of students because it is possible to reach out to all while opening, at the same time, private rooms for work. In general, there seems to be a freedom of choice in terms of which platform all the schools and the teachers can use. As an answer to the question if the teachers communicate with colleagues to co-create or share resources, material, and lesson plans for online teaching, the focus group said that they had a frequent exchange of material and that exchange of feedback was possible, if needed.

Measures for access and data protection
Regarding the specific equity measures applied, to provide all students with access to online education, it can be said that all institutions offer individual support through the professional teachers from each subject to every student. Furthermore, there are enough portable devices such as laptops and tablets that the students can lend from school. Sometimes also the parents are involved to support the students in the digital use. However, the responses to the specific measures for data and device protection in the institution varied among the focus group. In one institution all devices were managed from a central facility (Jamf, Opsi) and the data was saved on a server inside the school building. Another institution was using logineo as a save platform to send emails with sensible information. Another member from the focus group believed that the city, where the school belongs to, was responsible for device maintenance and data security.

Teaching and learning methods
The pedagogical approaches used by the focus group in their online teaching was research-based learning and videos from the internet with a modern and appealing character for the students. Most of the time the school still worked with individual hand- outs/worksheets via email with tasks for the students on it. Generally, the pedagogical approaches were subject-dependent and therefore digital materials were much better to use in natural sciences. Furthermore, the remote education made it, according to the focus group, easier to work individually with the students and give them individual tasks and feedback depending on their level of knowledge. Regarding the resources used for online classes, the focus group

mentioned that they developed most of the material on their own, based on schoolbooks. Therefore, the resources were individual and can vary a lot. One teacher liked to use power point to guide through a zoom lesson, others used worksheets from material websites such as "teacher's office" or they just worked with the book by assigning tasks to their students. Creating your own material was time intensive and therefore not used to a great extent. Lastly, all participants agreed there they integrated learning activities that enhanced the learners' digital skills, mostly during IT classes.

Assessment methods

In terms of assessment and provision of feedback, the focus group said that students can only be judged to a very limited extent when learning remotely. The home situation under which the performance is made can vary greatly. However, digital project work can be used as a basis for assessment. Some teachers were giving feedback in zoom lessons, concrete and situational. And one institution also used the learning platform Moodle for individually feedback to the results of works/assignments. To make sure the students didn't search for the correct answers online, during a test, some schools posed limitations such as uploading or sending the results within the time limit of 10 minutes or through online programs like survey creation for tests. The work to develop these surveys was intensive. Teachers were facing the problem that some students were using excuses like having bad internet connection, or no access to a platform to upload the results. Therefore, the assessment process became difficult, and students could not be graded.

Evaluation of online learning

The focus group gave a clear statement to the question if there had been an evaluation method for the use of digital technologies: there was a constant discussion in all institutions for suggestions about the use of IT, since more than 1000 students are impacted. This topic was discussed in conferences in particular, but some institutions had established a team of teachers specifically to evaluate the topic of homeschooling and act as contact persons for questions. In this way, current problems were constantly spotted. Since the corona pandemic there had been a steady development, to better positioned and make more material available for any potential lockdowns.

Professional development and support

The response to the question if the school provided opportunities to participate in continuous professional development for teaching online/remotely the experiences in the focus group varied. One school had fixed internal trainings and offered time off for teachers who wanted to join external trainings. Another institution had offered in- school workshops

during homeschooling that was held by other colleagues. And some schools even expected/ asked their teachers to be trained in their free time.

Suggestions for improvement

As an improvement for successful online education the focus group mentioned that publishers urgently need to adapt their materials and apps must be financed by the school. In general, schools would need a steady amount of money immediately for the administration of the IT landscape, especially a stable internet connection. Moreover, emphases should be placed on a platform independence. A coordinated political strategy is needed instead of short-term financial injections. Additionally, there should be more trainings for teachers to make the best possible use of digital offerings and to use them profitably.

b) Principals and leadership teams' responses

The second part of the interview addressed the principals and leadership teams. They were asked if there was a specific strategy for integrating digital technologies and what kind of measures were included in this plan. First, a certain availability must be ensured so that good and bad experiences can be gathered. Colleagues were supported by short micro training sessions on very specific issues. This process always involved the teaching staff, and often also students and parents. For certain areas (iPads, infrastructure, support in technical questions, etc.) there were contact persons in the faculty. Additionally, when asked if the school collaborates with other schools or organisations to support the use of digital technologies in online education the focus group said that they work with a total of 5 companies, for some of which they have carried out pilot projects to improve their product. They also maintained a constant exchange with other schools. Regarding the ways the institutions supported teachers to implement online/remote teaching the focus group made clear that their goal had been face-to-face teaching, as the norm in schools. The experiences during lockdown have made it clear that the best distance learning cannot replace face-to-face teaching, according to the focus group. However, many changes, especially in communication, will remain in the future. In response to the question if there was a plan to help teachers to deal with challenges that arise with remote teaching and learning, related to students learning needs and socio- economic background, the focus group highlighted that there were good plans for collaborative teaching in the school and the institution wanted to become even better at it, bridging the gaps in enjoyment that have accumulated.

2.2 Cyprus

2.2.1 Results from the questionnaire

The questionnaire was administrated in Greek (translated from the English original version) online through a Google form. CARDET and UNIC contacted to teachers and school leaders of low secondary and up secondary schools through direct contact (already existing networks), announcements in the University and mass mail. The respondents were thoroughly informed about the project and its objectives.

2.2.1.1. Profile of the participants

There were thirty-four (34) participants that completed the questionnaire. The majority (75.6%) were women, and a small portion (23.5%) were men (Fig. 8). About 44% were between 31 to 35 years old, 17.6% were 36 top 45 years old, while 26.5% were less than 30 years old (Fig. 9).
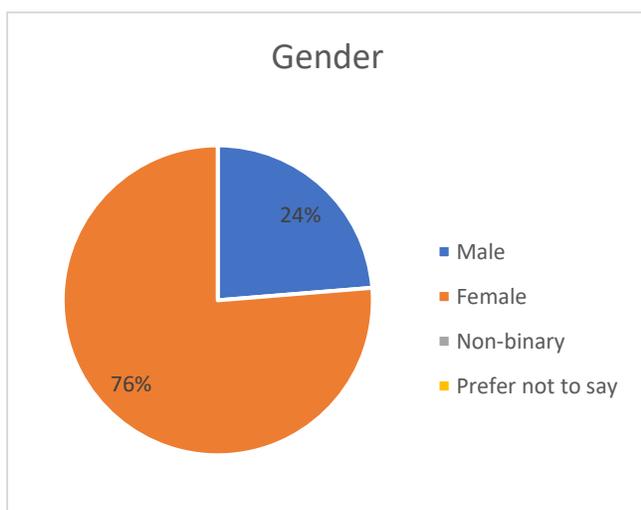

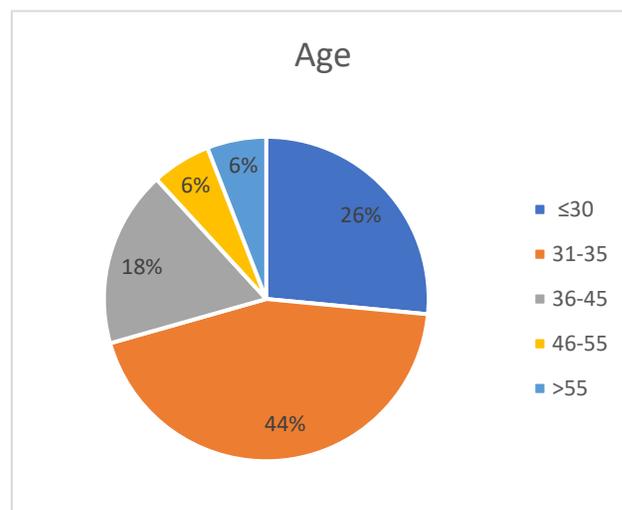Figure 9. Participants' gender in percentage

Figure 8. Participants' age in percentage

As shown in the table below (Table 4), almost all (f=31) were working at public schools, undertaking teaching responsibilities (f=32). However, there were also two (2) people in a leading position. Most of the participants (f=21) had obtained a Master's degree.

Table 4. Description of the schools that participants represented along with their job position and degrees

Type of School	N	Frequency	%
Public	34	31	91.2
Private	34	3	8.8
Job position			
Teaching	34	32	94.1
Leadership	34	2	5.9
Learning design	34	-	-
eLearning development	34	-	-
Highest degree of formal education			
Bachelor	34	12	35.3
Master	34	21	61.8
Doctorate	34	1	2.9
Post-Doctoral	34	-	-

Based on the results (Table 5), half of the participants (50%) had been teaching for 6 to 10 years and the majority (76.5%) were teaching mostly on a lower secondary level during the academic year. In this context, there was a variety in terms of the teaching specialties of the participants (Fig. 10), with the most prominent being Greek and foreign languages (f=7, seven each subject respectively), Mathematics (f=5), IT and Chemistry (f=3, three each subject respectively).

Table 5. Description of participants' teaching experience (years of teaching and grade level)

Years of teaching			
0-5	34	13	38.2
6-10	34	17	50
11-15	34	2	5.9
More than 15	34	2	5.9
Grade teaching most hours			
Lower secondary level	34	26	76.5
Upper secondary level	34	7	20.6
N/A	34	1	2.9

Teaching specialties/subjects

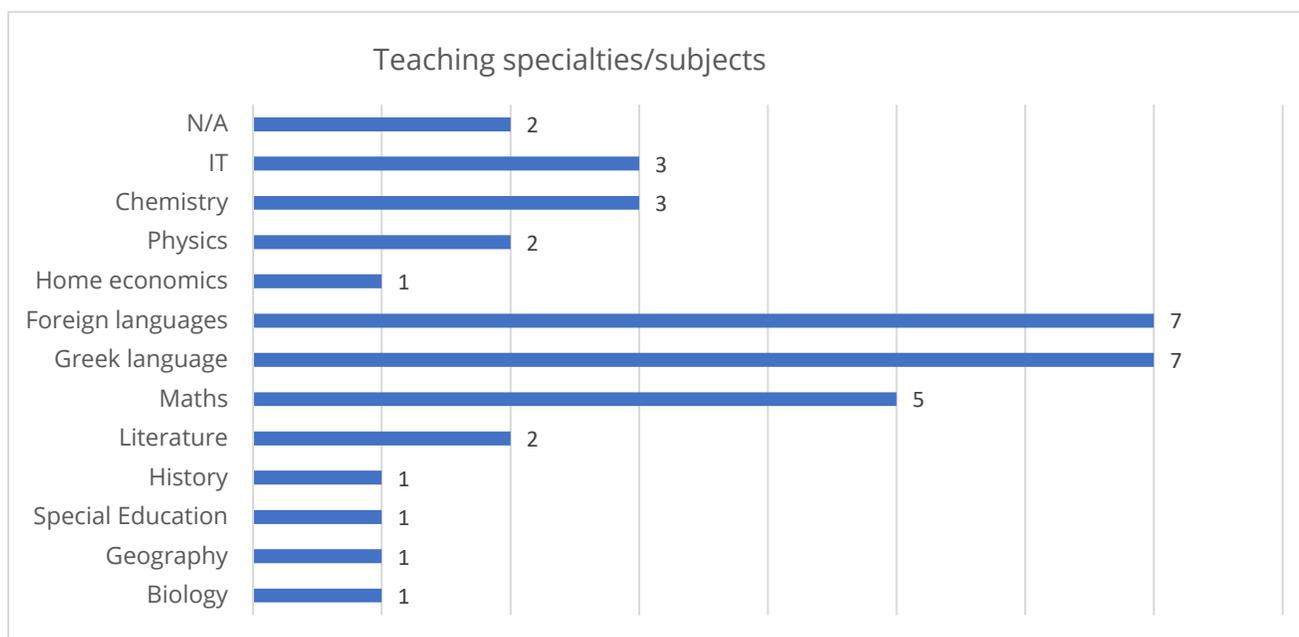| Subject	Count
N/A	2
IT	3
Chemistry	3
Physics	2
Home economics	1
Foreign languages	7
Greek language	7
Maths	5
Literature	2
History	1
Special Education	1
Geography	1
Biology	1

Figure 10. Description of participants' specialties

2.2.1.2 Main Findings

As shown from the results (Table 6), a small portion (35.3%) reported that there was a strategic plan for the implementation of virtual schooling. The rest reported that either there was no strategic plan (44.1%) or they were not aware of it (20.6%). This reveals why further challenges may arise. However, almost all (91.2%) mentioned that schoolteachers, leaders, and learning designers were collaborating to review the progress of online education. Moreover, most participants (64.7%) agreed that there was no adequate equipment at schools to support the online learning experience. Considering that most participants were working at public schools, the funding policies may interfere with the infrastructure provided. According to all the respondents, though, there was technical support, in case of issues related to the technology used and most of them (94.1%) were aware of data protection systems being in place. Lastly, many participants (58.8%) stated that measures were taken to promote students' equal access to online learning.

Table 6. Participants' agreement about leadership practices and the state of infrastructure

Leadership & Infrastructure	N	% Yes	% No	% I do not know
Strategic plan	34	35.3	44.1	20.6
Progress review	34	91.2	5.9	2.9
Adequate equipment	34	32.4	64.7	2.9
Technical support	34	100	-	-
Data protection systems	34	94.1	-	5.9
Measures for equal access	34	58.8	38.2	2.9

Regarding which existing measures ensured students' equal access (Fig. 11), participants mainly reported that there were school-owned devices that students could use (f=20) as well as portable devices they could take home (f=18). This may be linked with governmental initiatives taken during the emergency remote teaching period where digital devices were distributed to those in need. According to fifteen (15) respondents, there was training on how to use digital technologies, too. Assistive technologies for learners with special needs, financial and psychological support were not so common.
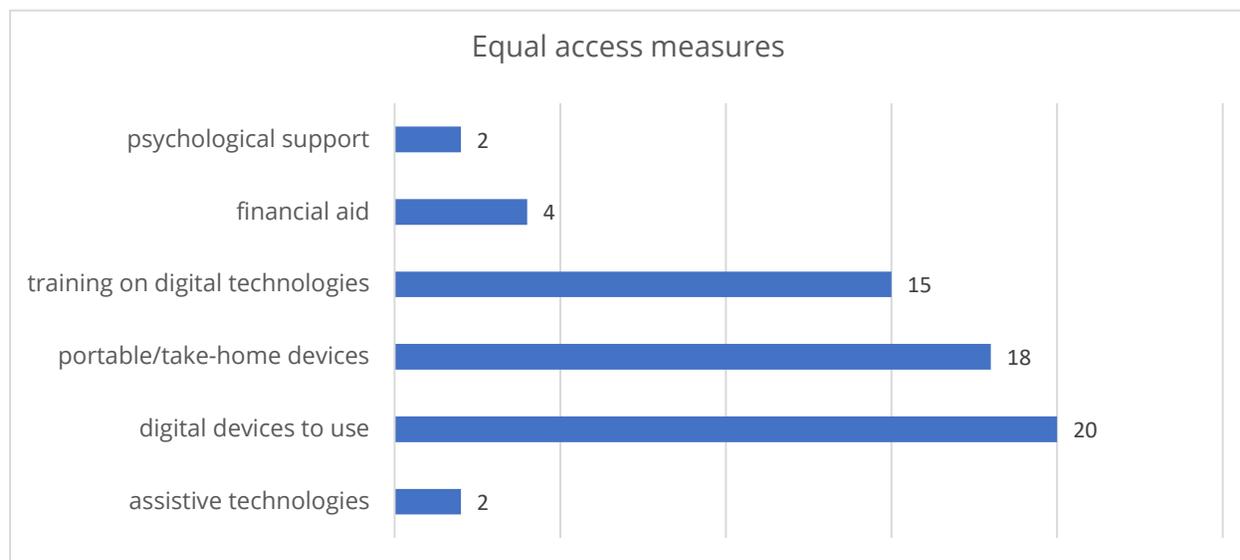

Figure 11. Frequency of participants' choices about the existing measures for students' equal access to distance education

In the second part of the questionnaire, the collaboration and professional development practices were examined. After analysing the results (Table 7), we have found

out that a great number of participants (58.8) reported that parents, teachers, and students communicated through a digital platform for school-related issues. A considerable amount (41.2), though, stated that such communication was not mediated by a platform. It is possible that communication was established through separate tools, rather than a holistic platform (e.g., via phone, e-mail, etc.). Most respondents (58.8%) agreed on the existence of external collaborations with other schools, businesses, research centers, Universities) that facilitate the use of technology. It is true that during the emergency remote teaching, the Ministry of Education signed an agreement with Microsoft for the use of Teams as a web conferencing tool while there were initiatives from research centers to evaluate the implementation of distance education. Finally, almost all participants (94.1%) said that there were training opportunities for the education staff.

Table 7. Participants' agreement about the existence of communication, external collaboration and professional development

Collaboration & professional development	N	% Yes	% No	% I do not know
Communication	34	58.8	41.2	9.1
External collaborations	34	58.8	38.2	2.9
Staff's training opportunities	34	94.1	2.9	2.9

On the one hand, the most frequent types of direct professional development practices followed (Figure 12) were the online courses, seminars, and conferences (f=32), the attendance of accredited course (f=23), and in-house training sessions such as workshops with the ICT coordinator (f-21). On the other hand, the most frequent types of indirect professional development practices followed were learning from other colleagues (f= 31), through mentoring and coaching (f=28) and online communities of practice (f=28). Especially during the COVID-19 era, where online learning was abruptly implemented, teachers came together to assist in the process by exchanging good practices. However, it was frequent to conduct study visits to other institutions (f=3) or attend face-to-face courses, seminars, and conferences (f=15) maybe due to the convenience offered by the various forms of online interaction.

Figure 12. Frequency of participants' choices about the professional development opportunities provided

The last part of the questionnaire examined teaching and learning practices implemented during online learning. First, most participants (76%) indicated that there was adequate time given to teachers to explore ways of improving the teaching procedures (Fig. 13). In terms of which teaching methods are used (Fig. 14), the results (table) show that formative assessment was chosen by almost all participants (f=33), followed by project-based learning (f=30) and refection on learning (f=27). During the emergency remote teaching, final exams were cancelled, therefore ongoing assessment seems to be preferred over the summative one. It is interesting that many respondents (f=21) stated that direct instruction was present along with inquiry-based learning (f=21). It would be interesting to further examine the extent to which these approaches were followed, since they contradict each other. Peer-to-peer feedback was not widely favoured (f=16), maybe because students need to feel comfortable with the mode of online instruction, the tech tools used while increasing their self-regulation, before engaging with provision of feedback to others. Among the less frequent choices were the personalisation of learning and its interdisciplinary nature. It is true that successful implementation of these approaches relies mostly on the way curricula are structured and not exclusively on the ways individuals (teachers) choose to teach.
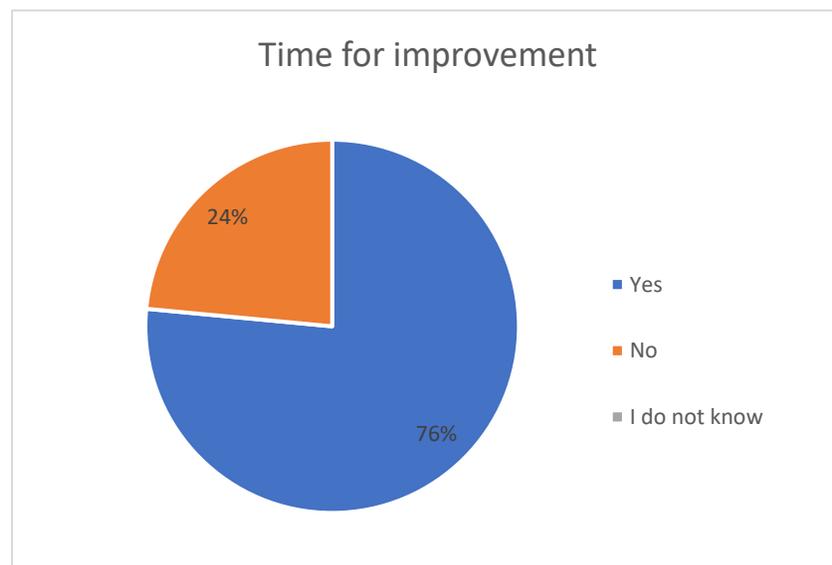

Figure 13. Percentage of participants' agreement about whether instructors have adequate time to improve their teaching
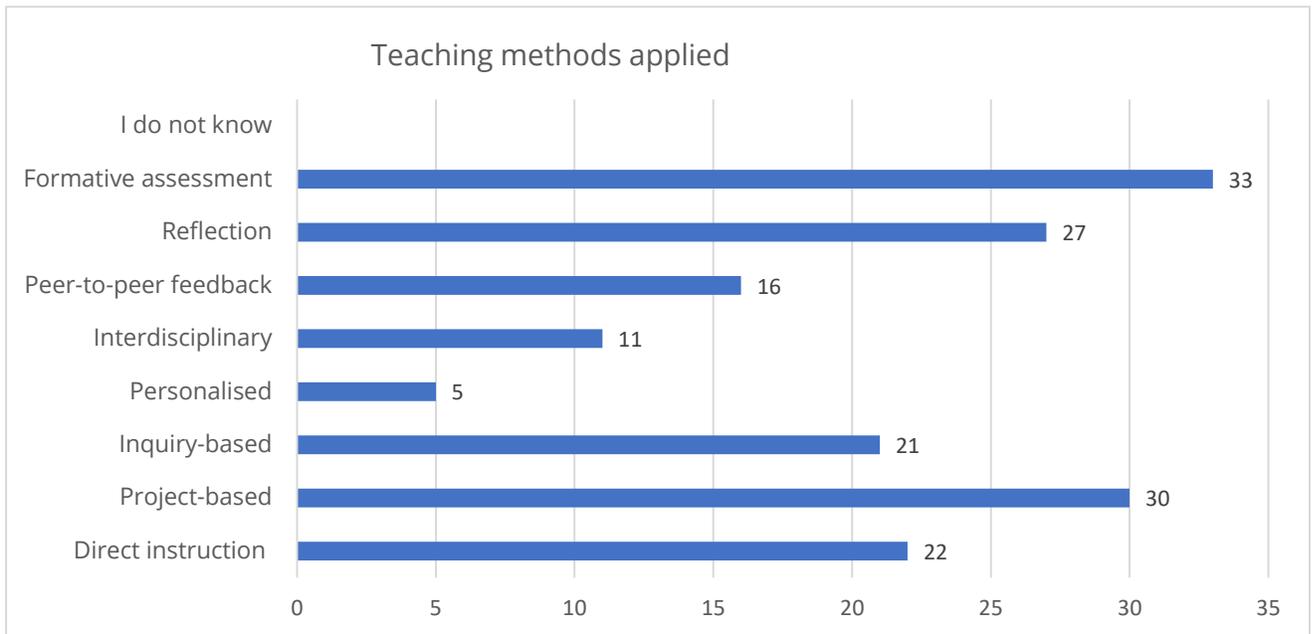
Figure 14. Frequency of participants' choices about which teaching methods are used

Regarding which technologies/types of resources are integrated and content-creation approaches are followed (Fig. 15), almost all participants agreed on the use of web conferencing tools (f=34), along with Learning Management Systems (LMS) (f=32), enhanced by audiovisual material/content (f=33), presentation (f=32), and text processing tools (f=31). The highly frequent usage of the last three could be explained by the fact that many teachers already use them during face-to-face instruction, and they are usually accustomed to them.

It seems noteworthy that online collaborative tools were also used by many teachers (f=27) along with ready-made digital resources (f=24). However, only a small number of participants reported that digital resources aiming to support students with special needs were created or used. This aligns with the fact that some respondents had previously stated that there are not enough equity measures taken. Finally, learning analytics, an emerging area that seems promising, were not widely exploited (f=12) while digital resources for personalised learning were not created and/or used at all. Further training might be needed along with policies that will prompt their effective integration into the educational procedures.
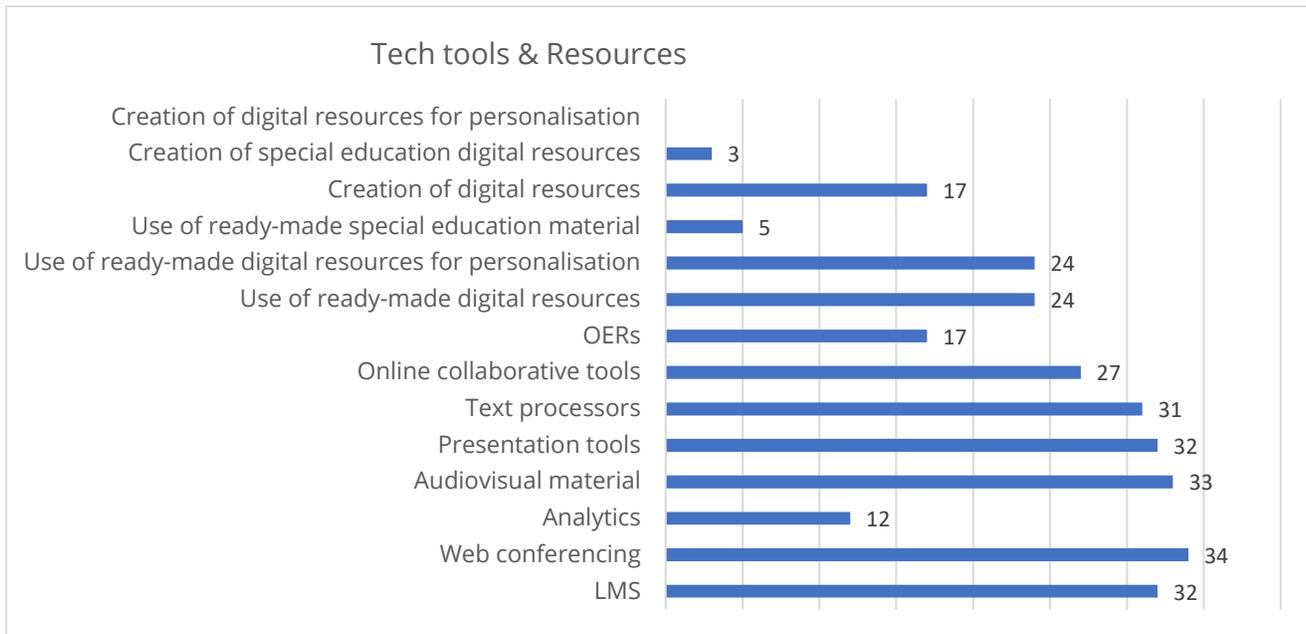

Figure 15. Frequency of participants' choices about which tools/resources are used and content-creation approaches are followed

As far as students' digital skills are concerned (Table 8), participants mostly agreed (82.2%) that there were activities to develop these competencies. These are mostly focused (Fig. 16) on how students can behave safely (f=27) and responsibly (f=22) as well as how to communicate (f=22) and protect their devices (f=20). The development of these skills could be prioritised due to students' age that requires detailed guidance. It is worth mentioning, that one participant (f=1), commented that there were not specific activities destined to build these competencies; those were developed indirectly through the tasks assigned to students.

Table 8. Percentage of participants' agreement about whether there are activities to develop students' digital skills.

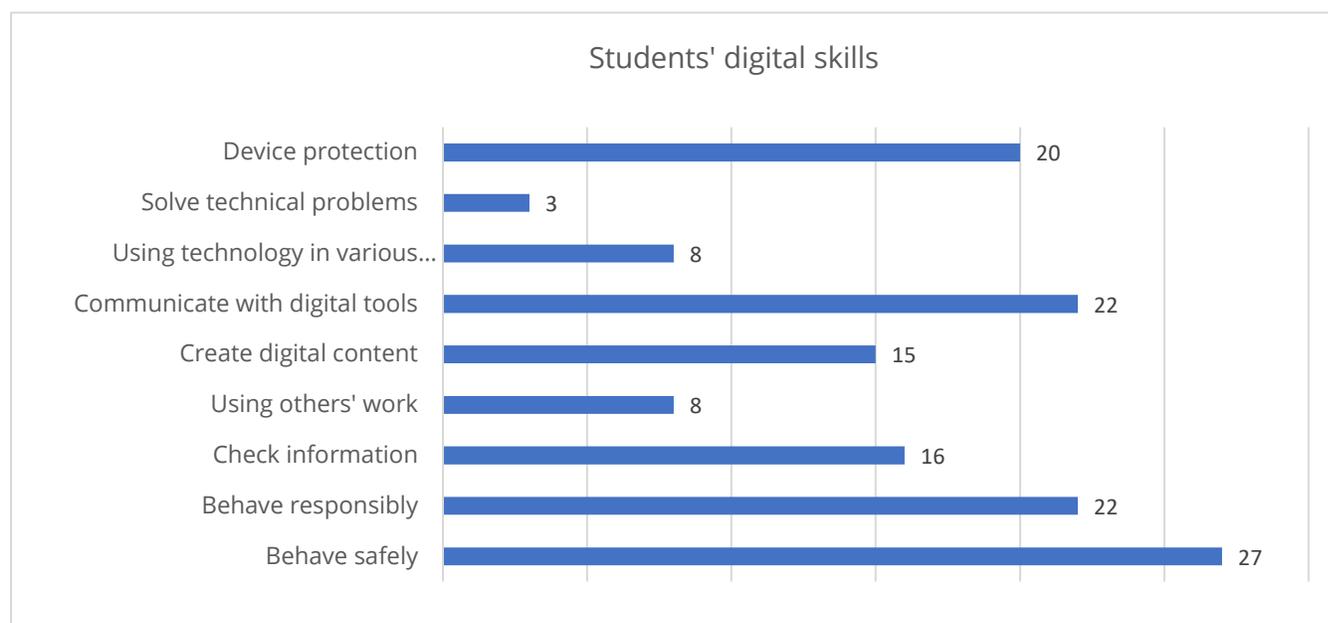| Students' digital skills	N	% Yes	% No	% I do not know
Activities to develop competences	33	82.2	11.8	5.9

Figure 16 . Frequency of participants' choices about which students' digital skills are developed.

The last question of the questionnaire investigated the challenges of online learning that participants might have faced (Fig. 17). The obstacles were mainly technical; low-quality/low-speed Internet connection (f=33), lack of adequate technical support (f=24) and suitable devices (f=23). Some administrative issues were also reported: almost all participants (f=31) stated that there were budget restrictions to access adequate teaching material while there were difficulties in managing the online classroom (f=22), especially because cameras were turned off due to data protection measures, as some participants added. Additional qualitative comments by the respondents revealed that there were difficulties in online communication (e.g., with parents) and some students did not have an appropriate environment to smoothly attend the online lessons. Furthermore, even though professional development is promoted, training opportunities are mostly theoretically based (f=2).
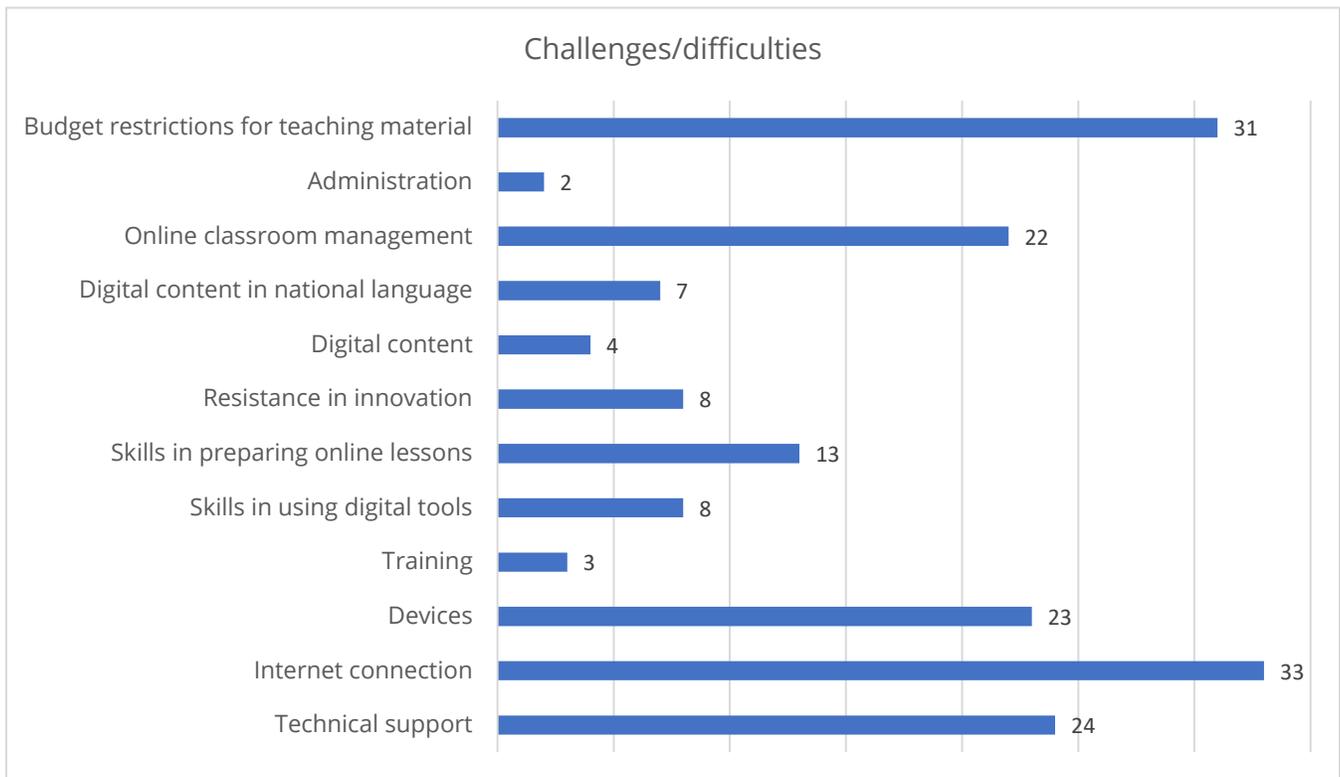

Figure 17. Frequency of participants' choices about the challenges/difficulties they face.

2.2.2 Results from the focus group

2.2.2.1. Profile of the participants

Six (6) participants in total participated in the focus group. All of them were secondary school teachers at public and private schools in the Republic of Cyprus. Their areas of expertise differed, covering a wide range of subjects taught in schools. Their experience was mostly documented based on the emergency remote teaching that took place during the Covid-19 period.

2.2.2.2 Main Findings

To analyse the qualitative data, we revealed the hidden patterns of the focus group. Two main (2) categories were extensively discussed covering three (3) and four (4) themes each. (Table 8).

Table 9. Categories and themes from the data analysis

Categories	Themes
Main obstacles and challenges	Lack of adequate and reliable infrastructure
	Lack of digital skills
	Limited implementation of innovative pedagogies
Course of action	Training
	Collaboration and networking
	Support to participants
	Evaluation

a) Main obstacles and challenges

One of the most prominent hindrances to the implementation of distance learning is the lack of adequate and reliable infrastructure for all. According to the participants, many schools did not possess up-to-date equipment such as PC, laptops, and/or tablets, hardware such as high-quality microphones, cameras, and software such as resources to cover the

needs of online teaching. Internet connection had not been always stable or fast enough to support an online classroom of many students, one they are simultaneously present with their cameras open. This is an issue that many teachers had to face since they delivered their online lessons from the school premises. On the same note, even though technical support was provided, it had not always been sufficient. In many cases, there was one expert available for more than one schools making difficult to cover all the needs that exist. For this reason, most teachers relied on more experienced colleagues to assist them in the process.

"We are way behind when it comes to distance education and mostly in terms of equipment. This was evident during the emergency remote teaching period, in the previous school year. Even though PC exist in most schools, they cannot effectively support online learning". (Secondary school teacher)

Even when adequate tools are provided, not all participants have the necessary digital skills to use them effectively. When we refer to digital skills, we should include both the knowledge of accessing technology (e.g., a platform to upload learning material) but also the skills of using technology safely, responsibly, and creatively to serve specific purposes (e.g., choosing appropriate tools based on the needs that exist instead of integrating only those that are familiar). In this context, teachers', parents', and students' level of competences varied; there was often lack of training opportunities and they resorted to extracurricular activities offered by private institutes to develop their competences. As a result, when they are required to use specific, new tools, they need adequate time to adapt and use them effectively.

"It should not be taken for granted that all teachers and parents know how to use the technology required to be used." (Secondary school teacher)

The restricted teaching time along with the lack of digital skills limit the implementation of innovative online pedagogies. Teachers were usually asked to deliver a lesson within a specific time limit, without having the opportunity to adjust and exploit the capabilities of the online environment. Therefore, they were transferring traditional approaches of teaching and assessment (e.g., lecturing, closed-ended quizzes) they are familiar with, to the online setting, instead of modern, co-constructivist or social methods (e.g., project-based, game-based learning, etc.) that are out of their comfort zone. For instance, they were avoiding collaborating with each other to teach a lesson (co-teaching model) or connect students from different online classes through projects. In addition, since there was no common policy (provided by the school or Ministry of Education) related to

which approaches should be followed, most educators applied those that were suitable to them.

"The lack of policy leads to the application of traditional approaches. It is ineffective, though, to open a book and just recite what is written or share a basic presentation of theory, especially during online learning."

(Secondary school teacher).

b) Course of action

Based on the above obstacles, the participants of the focus group highlighted specific measures that should be taken. First, it is important that training is provided to all those involved in online learning (teachers, school staff, students, and parents). On the one hand, official regulatory bodies can take on training (e.g., the Ministry of Education), offering opportunities for teachers' continuous development. Students and parents should have equal opportunities to develop their skills inside and/or outside school. Training should be prompt and hands-on, responding to the teachers' needs on the spot. On the other hand, teachers can benefit from (online) communities of practice, to exchange learning material, pioneering ideas, examples of best practice, holding discussions and solving directly or indirectly current and upcoming issues. For this reason, collaboration and networking practices among schools, teachers, research centers, should be promoted and facilitated by the policymakers for theory-driven and evidence-based change to occur.

"ICT teachers or teachers that have prior experience with distance learning often come together to form a community of educators from various subjects, to share their point of view or best practices they implement." (Secondary school teacher)

Apart from training, support should be provided on a constant basis. This needs to cover technical aspects, for instance on-the-job assistance or provision of suitable equipment as needed. Additionally, support should target the emotional well-being of all those involved (teachers, parents, and students). Especially teachers may resist to or feel stressed about any novelty or differentiation of the norm. With effective support, the right incentives are given to the educators, strengthening their job-related motivation. Finally, evaluation techniques should be present throughout all the stages of virtual schooling: from the design to the actual implementation. They should consider technical and pedagogical aspects, assessing the equipment, software, hardware, resources, practices, measures taken, and challenges arisen.

2.3 Italy

2.3.1 Results from the questionnaire

The questionnaire has been administrated in Italian (translated from the English original version) online through a Google form. CSC has administered the questionnaire to teachers and school leaders of low secondary and up secondary schools all over Italy. The means used were the direct contact (already existing networks), social media (Facebook post on CSC page), and mass mail. The respondents were informed about the project and its objectives. Out of 51 respondents, one did not give the consent for the privacy policy and therefore the processed answers are, in the end, 50. The questionnaire was a useful tool to collect teachers and school leaders experience with distance learning and digital education and to identify the existing challenges and needs.

2.3.1.1. Profile of the participants

The participants to the survey were a total of 50 among teachers and school leaders with a strong majority of women. Indeed, 40 participants out of 50 were female and only 10 male. As portrayed below (Fig. 18), most of the respondents were aged 36 – 45 years (42%), 22% aged over 55 years, 14% aged 46-55 years, 10% aged 31-35 years, and 12% aged 30 year or under.
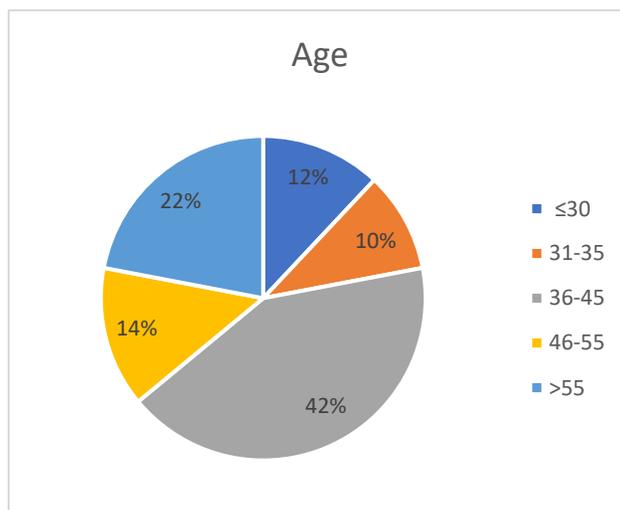
Figure 18. Participants' age in percentage

Among the respondents, almost all worked for a state/public institution (94%) while only the 6% worked for a Private secondary school. The representation among Lower secondary and Upper secondary schools is balanced: 24 respondents (48%) worked for Upper secondary schools, while 26 (52%) for Lower secondary schools. Moreover, most of the respondents were teachers (86%) (Fig. 19).

Professional profile
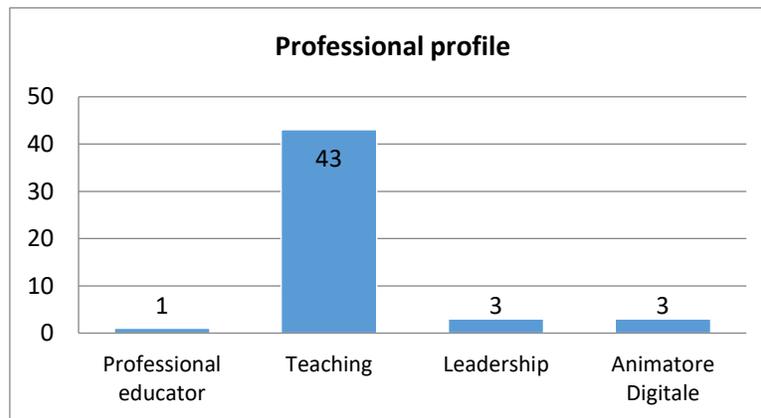
Figure 19. Participants' professional profile in frequency

Most of the respondents have more than 15 years of experience (Figure 20). The rest of the sample have 6-10 years of experience (14%) and 11-15 years (14%). Regarding their level of education:

- The majority (86%) of the respondents possess a Master's Degree
- 6% possess a Doctorate
- 4% possess a Bachelor Degree
- 2% possess a post-Doctorate
- 2% possess a High School Diploma.
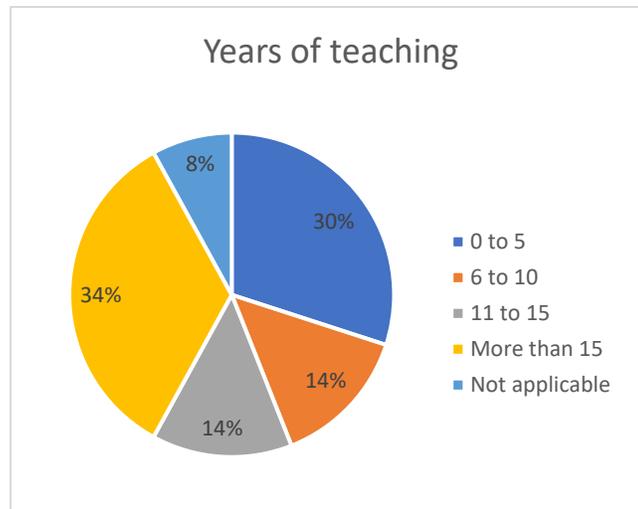
Figure 20. Participants' years of teaching in percentage

Lastly, concerning their teaching subjects, the answers were quite various with 20 different teaching subjects reported. The most frequent have been:

- Special education needs (14)
- Foreign languages (10)
- Italian language and Literature (8)
- Maths (5)
- Arts (5)
- History (5)
- Biology (2)
- Natural sciences (2)
- Physics (2)
- Philosophy (2)
- Civics (2)
- Law and Economics (2)

The other subjects that were indicated only by one respondent each were Chemistry, ICT, Music, Religion, Geography, Greek and Latin.

2.3.1.2 Main Findings

Looking at the Leadership and Infrastructure, compared to the data that were retrieved from the desk research, the questionnaire has shown unexpected positive results. The majority (64%) of the interviewed school leaders and teachers reported that in their schools there was adequate equipment (digital tools) to facilitate online learning and that

there were also strategic plans for the integration of digital technologies in their schools. The 80% of the participants to the survey also underlined that in their schools, technical support had been available in case of problems with digital technologies. Moreover, the majority (64%) also stated that there had been data protection systems in place. It is important to underline that the 76% of the interviewees reported that participants worked together to review the progresses of online teaching and learning.

The majority (86%) of the respondents declared that there were measures to provide all learners with access to online learning and that the most common measures were (Fig. 21) school-owned/managed digital devices for students to use (64%) and school -owned and managed portable devices that students could take home (64%), followed by assistive technologies for students in need of special support (38%).
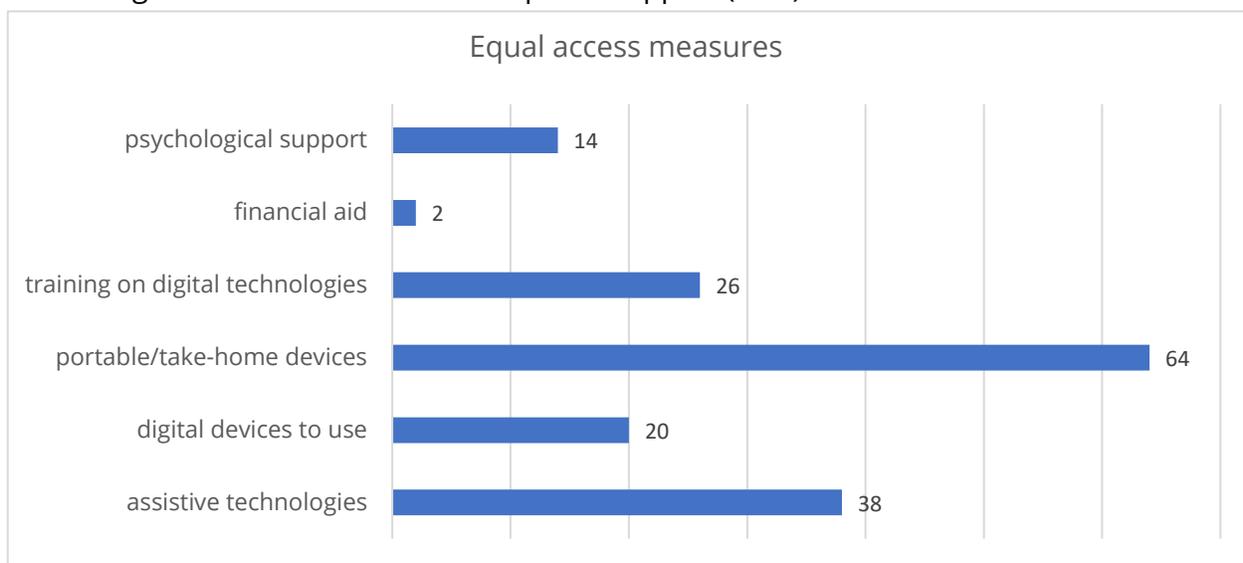
Figure 21. Percentages of the types of measures for equal access to distance education

Looking at the collaboration and professional development sphere, almost all respondents (94%) answered that in their schools there was an online platform that all participants (school staff, parents, students) used for school-related communication. However, the majority (90%) reported that there were not any partnerships with other schools or organisations (universities, research centres, businesses) to support the use of digital technologies. A data that is in line with the desk research and also with the focus group is that school teachers have the opportunity for continuous professional development in online/remote teaching, mainly through (Fig. 22):

- online courses, webinars, or conferences (46%)
- learning from other colleagues (38%)
- in-house training sessions organised by the school (34%)

- face-to-face courses, seminars, or conferences (28%)

Figure 22. Percentages of the types of professional development opportunities provided

Concerning the Teaching and Learning practice, the majority of the respondents (64%) reported that teachers had time to explore how to improve their digital teaching. The most common approaches used for digital teaching and learning by the participants were (Fig. 23):
- Collaborative learning (64%)
- Traditional direct instruction (54%)
- Personalised learning (48%)
- Inquiry-based learning (36%)
- Project/problem based approach (34%)
- Self-reflection on learning (30%).

The other less used approaches were cross-curricular instruction (26%); peer feedback (24%); formative assessment (16%); authentic assessment (14%). Traditional direct instruction was still chosen as one of the most used approaches, underlining that digital education is often perceived and implemented as a mere transfer of traditional education in an online environment.
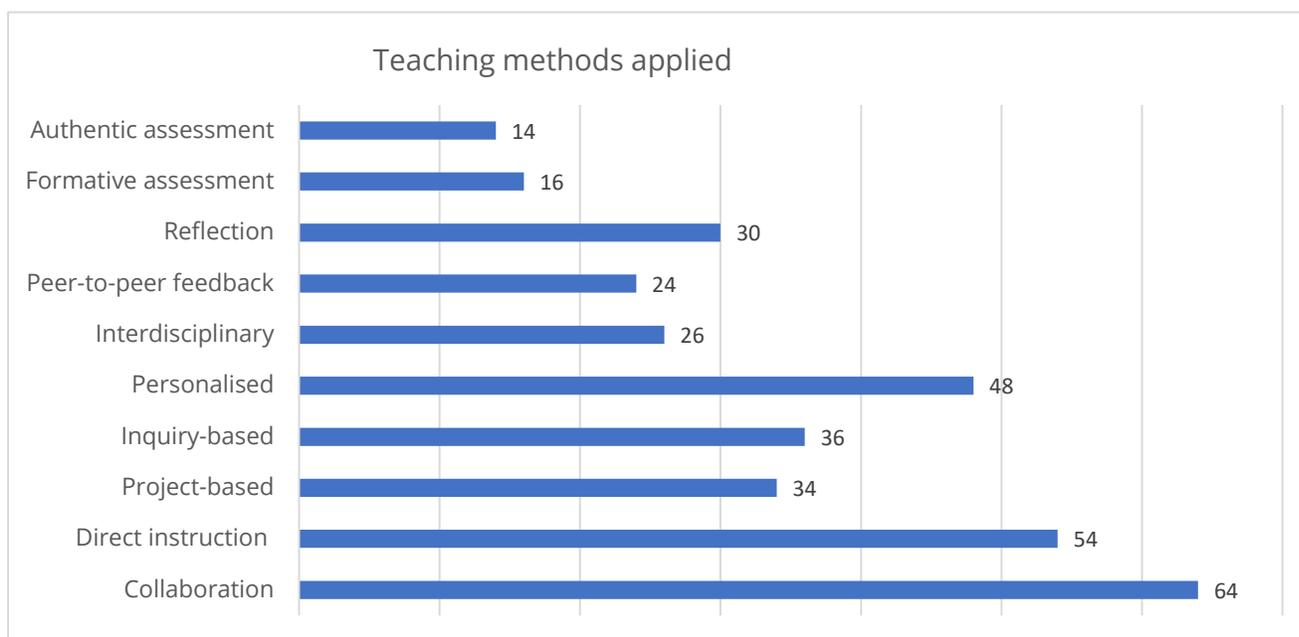
Figure 23. Percentages of the types of teaching methods the participants applied

Looking at the most used tools and resources for online teaching and learning, the school leaders, teachers and staff that participated in the questionnaire, answered that they used mainly (Fig. 24):

- Audio/video materials (78%)
- Learning management system (e.g., Moodle, Google Classroom, etc.) (74%)
- Web conferencing tools (e.g., WebEx, Zoom, Microsoft Teams, etc.) (72%)
- Digital presentations (MS Power Point, Google Slides, Prezi etc.) (66%)
- Word processors (e.g., MS Word, Google docs) (36%)
- Online collaborative tools (Padlet, Mentimeter, Kahoot, Quizlet, etc.) (28%)
- Use of ready-made digital resources for special needs learners (24%).

Other tools and resources were used sparsely: creation of digital resources (20%); use of ready-made digital resources (14%); creation of digital resources for special needs learners (14%); learning analytics and digital data (e.g., time students take to complete a task in a platform) (12%); OERs (8%); creation of digital resources for personalised learning (8%); use of ready-made digital resources for personalised learning (6%); ad hoc platform for math teaching (2%). According to these data, it seems that the interviewed teachers, make use mostly of traditional tools (audio/video materials, digital presentations etc.) without exploring much the creation of digital resources.
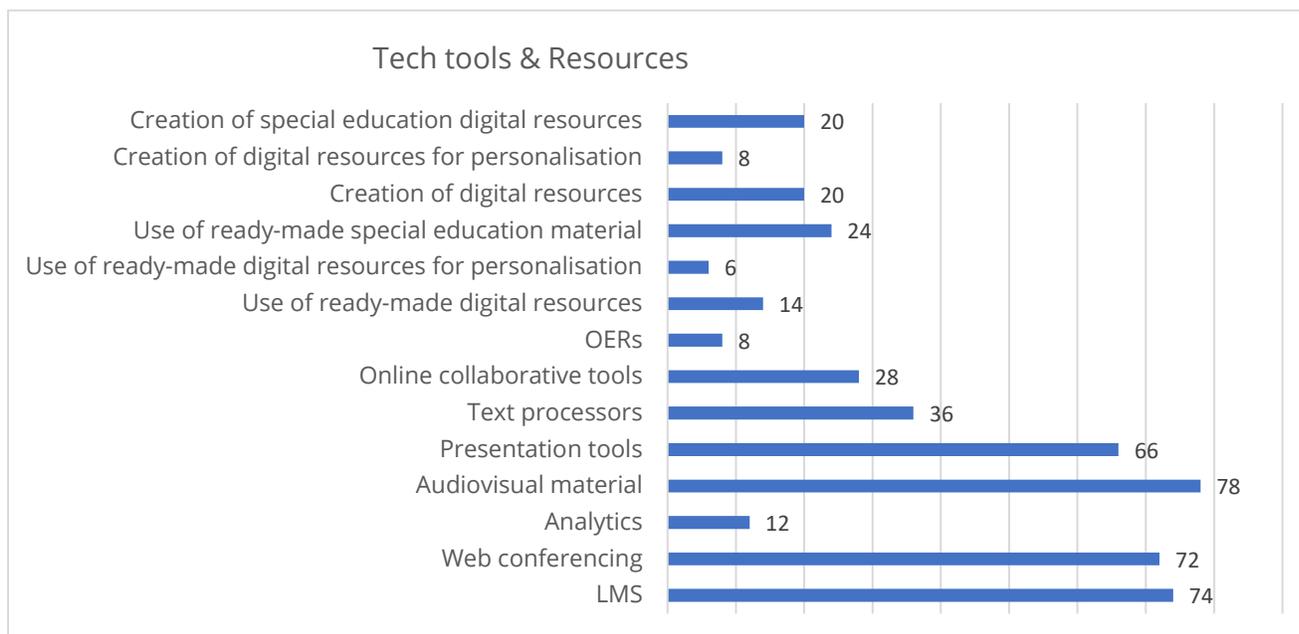
Figure 24. Percentages of the types of tools/resources and content-creation approaches the participants followed

The participants to the survey were also asked if in their schools there were activities that allowed students to develop their digital skills. The majority (74%) replied affirmatively, underlining, as the most common activities (Fig. 25):

- How to communicate using technology (46%)
- How to behave safely online (42%)
- How to behave responsibly and respect others online (40%)
- How to check that the online information is reliable and accurate (32%)
- How to create digital content (30%)
- How to develop digital skills across subject areas (24%)

The least developed activities were the following: how to use others' work they find online (18%); how to solve technical problems when using technology (10%); how to protect the devices (e.g., using anti-viruses, passwords) to avoid internet-related threats (4%); storytelling (2%).
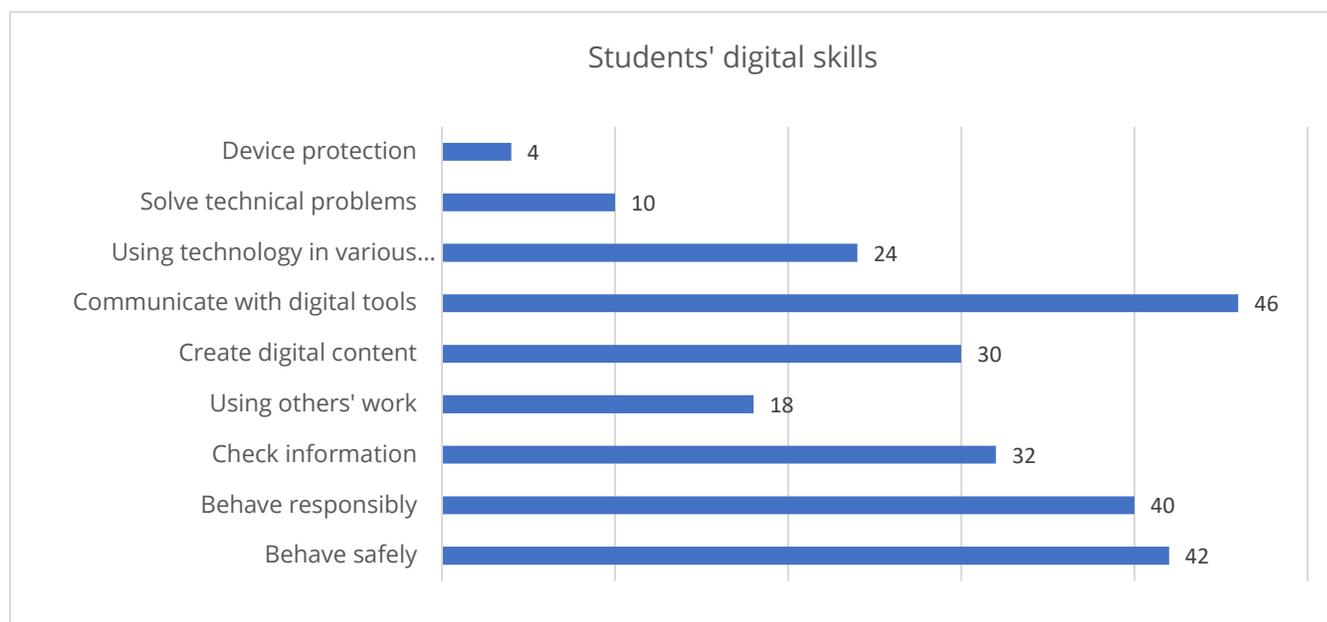
Figure 25. Percentages of the types of digital skills developed

Lastly, the participants pointed out the challenges that they were facing during online teaching and learning (Fig. 26). The most common one had been Insufficient Internet bandwidth or speed (40%). This data confirms what has been reported in the desk research, that in Italy only one school out of ten had access, before the pandemic to broadband connection. Moreover, 32% of them answered that another problem was the lack of adequate training/professional development. The other highlighted challenges were the insufficient technical support (28%), the resistance in adopting innovative online teaching methods (26%), the budget constraints in accessing adequate content/material for online teaching (22%), the inadequate devices (18%), the difficulties in managing an online class (16%), and the administrative organisation (schedule, communication etc.) (16%).

Challenges/difficulties

Category	Value
Budget restrictions for teaching material	22
Administration	16
Online classroom management	16
Digital content in national language	6
Digital content	4
Resistance in innovation	26
Skills in preparing online lessons	8
Skills in using digital tools	10
Training	32
Devices	18
Internet connection	40
Technical support	28

Figure 26. Percentages of the types of challenges/difficulties the particpants faced

2.3.2 Results from the focus group

The focus group had been conducted face-to-face on the 28th of October 2021 in Palermo in the meeting hall of the lower secondary school Istituto Comprensivo Statale ad Indirizzo Musicale "Lombardo Radice". CSC had previously collaborated with this school, and it has presented the opportunity of participating in this activity. After the positive response, the teachers interested in the focus group had been contacted via email. Before s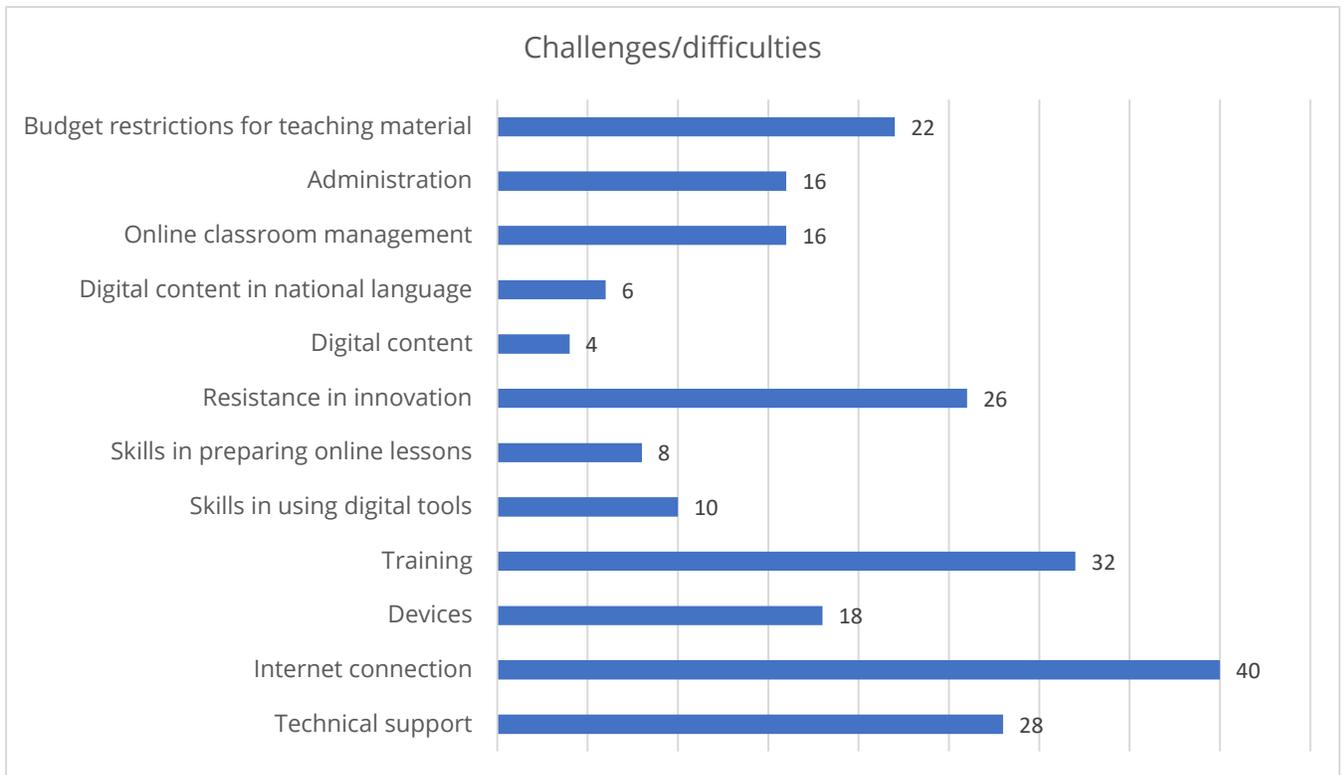tarting the activity, the researcher presented the project objectives and the aim of the research encouraging an open and free discussion among the participants. The participants agreed on the privacy consensus policy and the discussion had been recorded through audio recorder.

2.3.2.1. Profile of the participants

In the end, 3 teachers participated in the discussion. All the teachers were from the same lower secondary school, Istituto Comprensivo Statale ad Indirizzo Musicale "Lombardo Radice". The other three teachers that at first confirmed their participation in the focus group, had to cancel at the last minute for unexpected circumstances. The teachers were all female. Their teaching subjects were: special needs education, Italian and Literature, and Foreign Language.

2.3.2.2 Main Findings

During the discussion, the teachers reported that, concerning school infrastructures, with the emergency created by the pandemic, the situation had improved: **the internet connection had been good, and all the students possessed at least one portable device for digital education**. The LIM boards were also in the school, but their number was not sufficient to meet the usage demand. This is in line with what has emerged during the desk research. The only support that currently exists for learners to access digital education is school-owned and managed portable devices that students could take home.

All the teachers reported that there had been a system of data protection and that technical support had been available in case of difficulties. Also, during the pandemic the help of the ICT teacher had been fundamental. Moreover, there was an online platform that all participants (school staff, parents, students) used for school-related communication.

One of the most remarkable findings of the focus group has been that **before the pandemic**, their **use of digital education was limited** (mostly to the occasional use of the LIM board in class), then it increased at its maximum during the pandemic, and then, currently, **with the return to in presence it seems to be going back to the prior the**

pandemic levels. The teachers showed disappointment because for them digital education presented a number of improvements in teaching and learning. In particular, they considered it to be **more stimulating for students** and more **participative**. The Foreign Language teacher reported that for example, she used the eLearning platform connected to the English textbook and that this allowed students to participate in interactive activities and **they felt more involved in the learning process** and **more interested** in the learning content.

Moreover, the special needs teacher reported that the use of already developed digital resources for special needs students, for example students living with Autism Spectrum Disorder, facilitated the teaching and learning process because these learners could be **more focused** compared to regular lessons. She underlined that technology and **digital education had been fundamental in teaching and learning for special needs students**. Another benefit that all the three teachers reported is the change in the evaluation method. Thanks to digital education, **evaluation of contents was more immediate and allowed simultaneous feedback**. Students, in this way, could **improve faster** and feel more stimulated to learn.

All the teachers reported that **students did not possess basic digital skills** when the pandemic and the distance learning had started. Indeed, they did not know how to set up an email account, how to use Microsoft Office suite, or conference platforms such as Meet or Zoom. This was also true for some teachers that did not possess basic digital skills and that, therefore, were unable to design and implement virtual learning. Their wish had been that teachers and students receive compulsory training on basic digital skills and on how to use digital tools for virtual learning. This finding is also in line with what has emerged in the desk research, that found out Italian students and teachers to be at the lowest places for digital readiness in Europe. The teachers pointed out that the school provided the teachers with multiple opportunities for continuous professional development in online/remote teaching, but sometimes, **teachers did not make an effort to develop their skills**. Teachers indeed can learn from other colleagues, participate in face-to-face courses, seminars, or conferences, and participate in online courses, webinars, but, sometimes, they **lack interest in professional development**. Another point that has emerged is that there had been no collaboration among teachers and school leaders to review the progress of online teaching and learning.

Regarding the teaching methodologies used, the interviewed teachers, did not mention any particular methodology underlining that, based on their teaching subjects and on the level of the classes, they develop every time different methodologies without using a codified one. They make use of already developed audio-video materials, they use collaborative learning, constant feedback on the learning process. They also noticed that

digital education, allowing practical learning, leads to the consolidation of contents (that is, indeed, one of the pillars of digital education). Usually, they also encouraged learning activities for the development of students' digital skills such as how to check that the online information is reliable and accurate.

2.4 Greece

2.4.1 Results from the questionnaire

2.4.1.1. Profile of the participants

There were twenty-five (25) participants that completed the questionnaire. The majority (72%) was women, and a small portion (28%) was men (Fig. 27). Over the half (56%) were between 46 to 55 years old, 16% were 36 to 45 years old, while 16% were younger than 30 years old. The 8% were over 55 years old and a 4% between 31 to 35 years old. (Fig. 28).

● Male	7
● Female	18
● Non-binary	0
● I prefer not to say	0

Female: 18 (72%)

Figure 27. Participants' gender in frequency

● 30 or under	4
● 31-35	1
● 36-45	4
● 46-55	14
● Over 55	2

Figure 28. Participants' age in frequency

Almost all participants (88%) were working at private schools, mostly undertaking teaching responsibilities (68%) (Fig. 29). There were six people (24%) in a leading position and most of the participants (30) had obtained a master's degree (Fig. 30).

● Teaching	17	
● Leadership	6	
● Learning/ Instructional design	0	
● eLearning development	0	
● Other	2	

Teaching: 17 (68%)
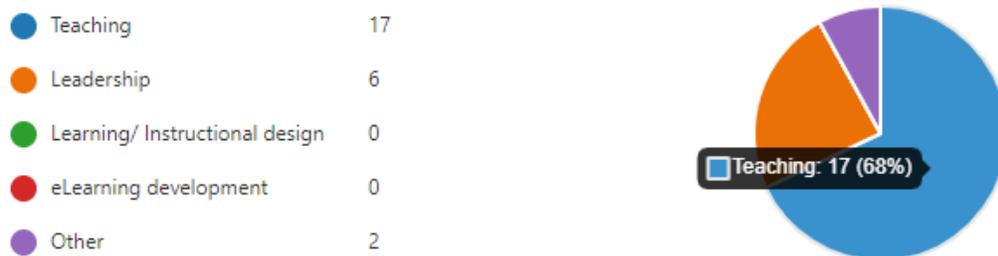
Figure 29. Description of participants' **type of job position**

● High school diploma	0	
● Professional diploma	1	
● Bachelor's Degree or equivalent	8	
● Master's Degree	14	
● Doctorate	2	
● Post-Doctoral	0	
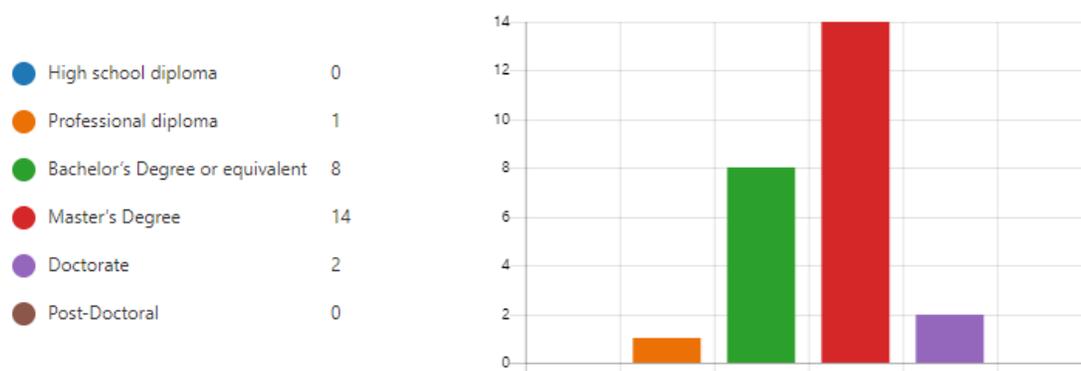
Figure 30. Description of participants' **highest degree of formal education**

Based on the results (Fig. 31), most of the participants (72%) had been teaching for more than 15 years, a 16% of the teachers for 5 years or less, a 4% between 6 to 10 years and another 4% between 11 to 15 years. The majority (68%) was teaching mostly on a lower secondary level during the academic year. In this context, there was a variety in terms of the teaching specialties of the participants (Fig. 32). Nine of them (9) were teaching foreign languages, four (4) information and communication, four (4) literature, while there were two (2) teachers in the field of physical education, two (2) mathematicians and one (1) biologist, one (1) for art and one (1) for music.

● 0-5 years	4	
● 6-10 years	1	
● 11-15 years	1	
● More than 15 years	18	
● Non applicable	1	

More than 15 years: 18 (72%)

Figure 31. Description of participants' years of teaching experience

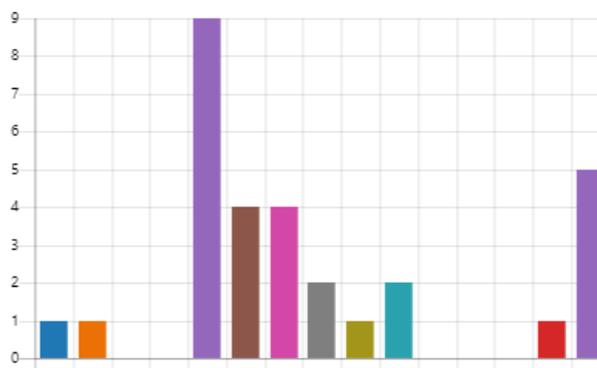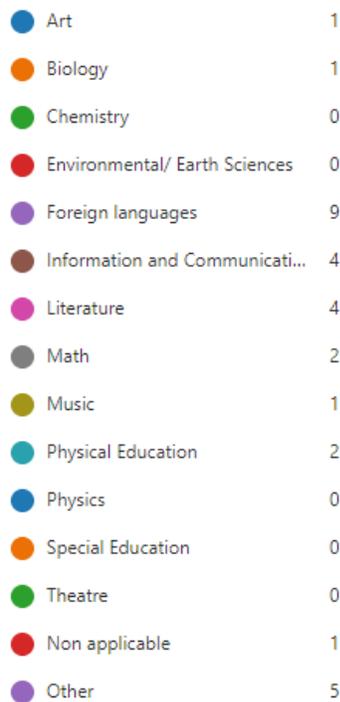|	
● Art	1
● Biology	1
● Chemistry	0
● Environmental/ Earth Sciences	0
● Foreign languages	9
● Information and Communicati...	4
● Literature	4
● Math	2
● Music	1
● Physical Education	2
● Physics	0
● Special Education	0
● Theatre	0
● Non applicable	1
● Other	5

Figure 32. Description of participants' specialties

2.4.1.2 Main Findings

As shown in the results, almost everyone (92%) reported that there was a strategic plan for the implementation of virtual schooling. The rest (4%) reported that either there was no strategic plan, or they were not aware of it. Furthermore, almost all participants (92%) mentioned that schoolteachers, leaders, and learning designers had been collaborating to review the progress of online education. Moreover, almost everyone (96%) agreed that the equipment in schools was adequate to support the online learning experience. Considering that most participants were working at private schools, this may not be the case for public schools. According to almost all responses (96%), there was technical support, in case of a failure in the technology. Most participants (72%) were aware of data protection systems being in place, while the 24% were not aware. Finally, almost all participants (92%) stated that measures were taken, to promote students' equal accessibility to online learning.

Regarding which existing measures ensured students' equal access (Fig. 33), participants mainly reported that there were school-owned devices that students could use (11) as well as portable ones they could also use at home (10). Nineteen (19) claimed that

they were trained on how to use digital technologies, too. Special needs students were offered assistive technologies according to eight (8) participants, as well as psychological support, according to ten (10) participants. Financial support was not a common answer (1).
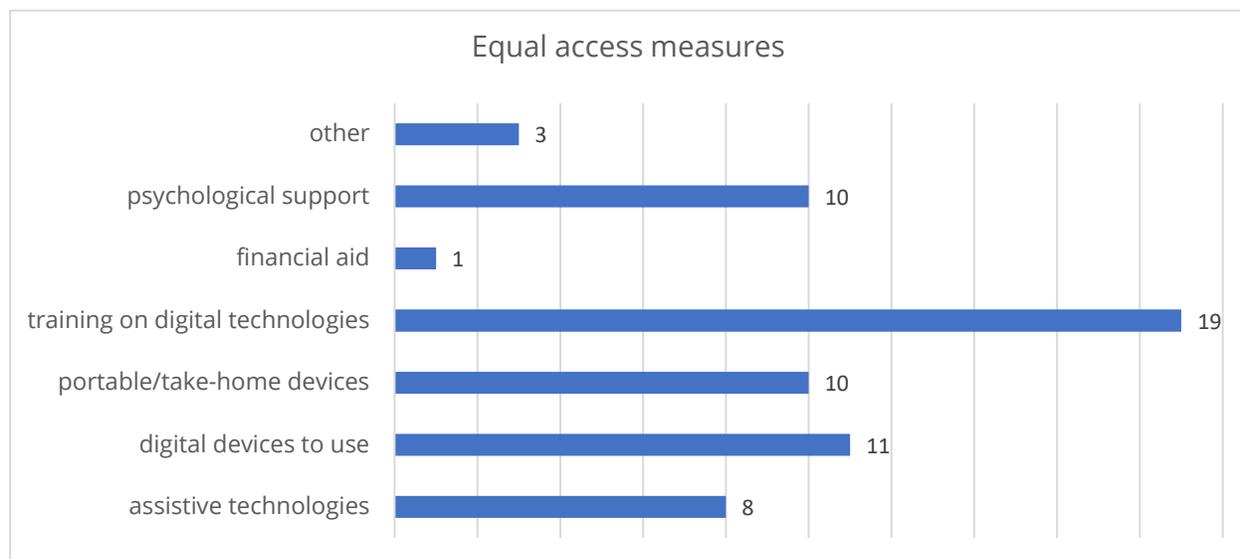

Figure 33. Type of measures providing all learners with access to online learning

In the second part of the questionnaire, we examined the collaboration and professional development practices. After analysing the results, we have found out that almost all participants (96%) reported that parents, teachers, and students communicated via a digital platform for school-related issues. Most answers (60%) showed the existence of external collaborations with other schools, businesses, research centers, and Universities that facilitate the use of technology. Finally, most of the participants (84%) said that there were training opportunities for the educational staff. On the one hand, the most frequent types of direct professional development practices followed (Fig. 34) were the online courses, seminars, and conferences (19), the attendance of accredited course (11), and in-house training sessions (10). On the other hand, the most frequent types of indirect professional development practices followed, were learning from other colleagues (17), through mentoring and coaching (10) and online communities of practice (15). Teachers got together to aid in the process, particularly during the COVID-19 era, when online learning was quickly deployed, by discussing best practices.

Figure 34. Frequency of participants' choices about the professional development opportunities provided

The last part of the questionnaire examined teaching and learning practices implemented during online learning. First, most participants (64%) indicated that there was adequate time given to teachers to explore ways of improving the teaching procedures, the 14% had a different opinion and the rest 20% wasn't sure about the time. In terms of which teaching methods are used (Fig. 35), the results show that project-based learning was chosen by almost all participants (20), followed by collaborative learning (19), inquiry-based learning (16) and traditional direct instruction (16). It would be fascinating to investigate how far these techniques were taken, as they contradict one other. It is interesting too that many respondents (15) stated that formative assessment was present. Peer-to-peer feedback was not widely favored (12), perhaps because, as reported in the case of Cyprus, students need to feel at ease with the method of online education and the technology tools utilised while strengthening their self-regulation before engaging in feedback to others. Among the less frequent choices were the personalisation of learning (13), perhaps because further skills and redesign of curricula are needed.
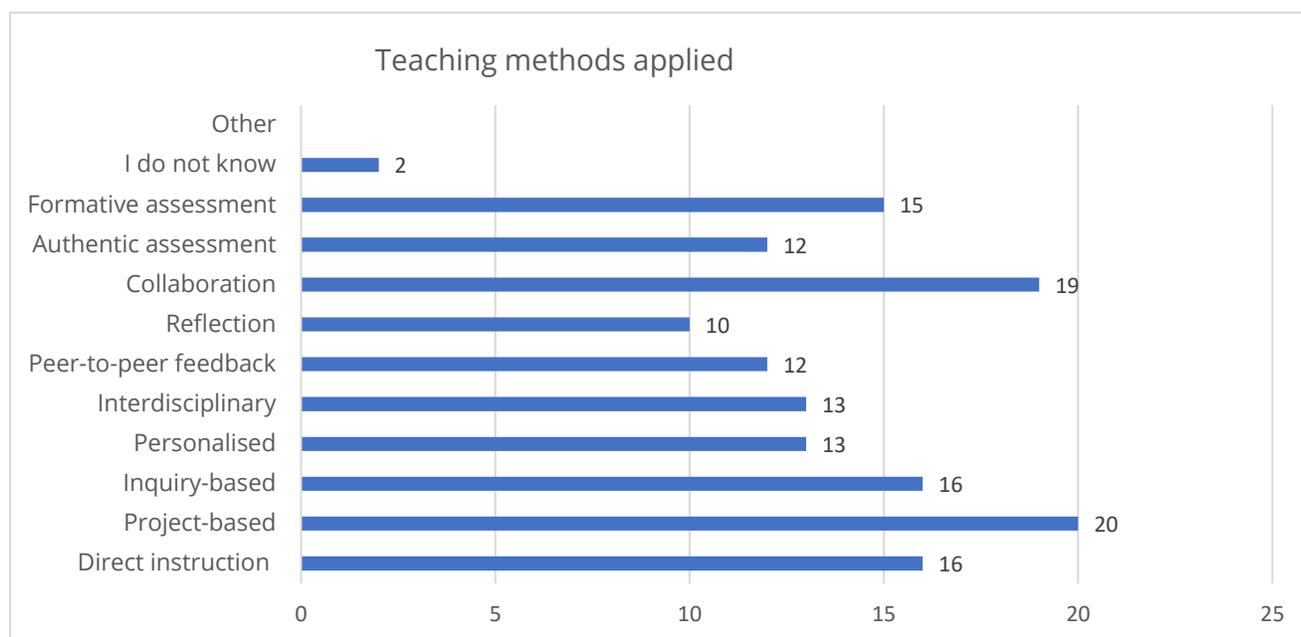
Figure 35. Frequency of participants' choices about which teaching methods are used

Regarding which technologies and types of resources are integrated and content-creation approaches are followed (Fig. 36), almost every participant agreed on the use of web conferencing tools (22), enhanced by audio-visual material/content (22), presentation (21), and text processing tools (22), tools which many teachers utilise in face-to-face education. Additionally, online collaborative tools were also used by many teachers (19) along with given digital resources (10). Only a few participants, though, stated that digital resources both personalised and those aiming to support students with special needs were created (3 personalised and 1 supporting special needs) or used (4 personalised and 3 supporting special needs). Finally, according to thirteen participants (13), learning analytics, a new field that it is emerging and seems promising, was used. It would be interesting to explore in which ways learning analytics, as a promising field, were exploited.
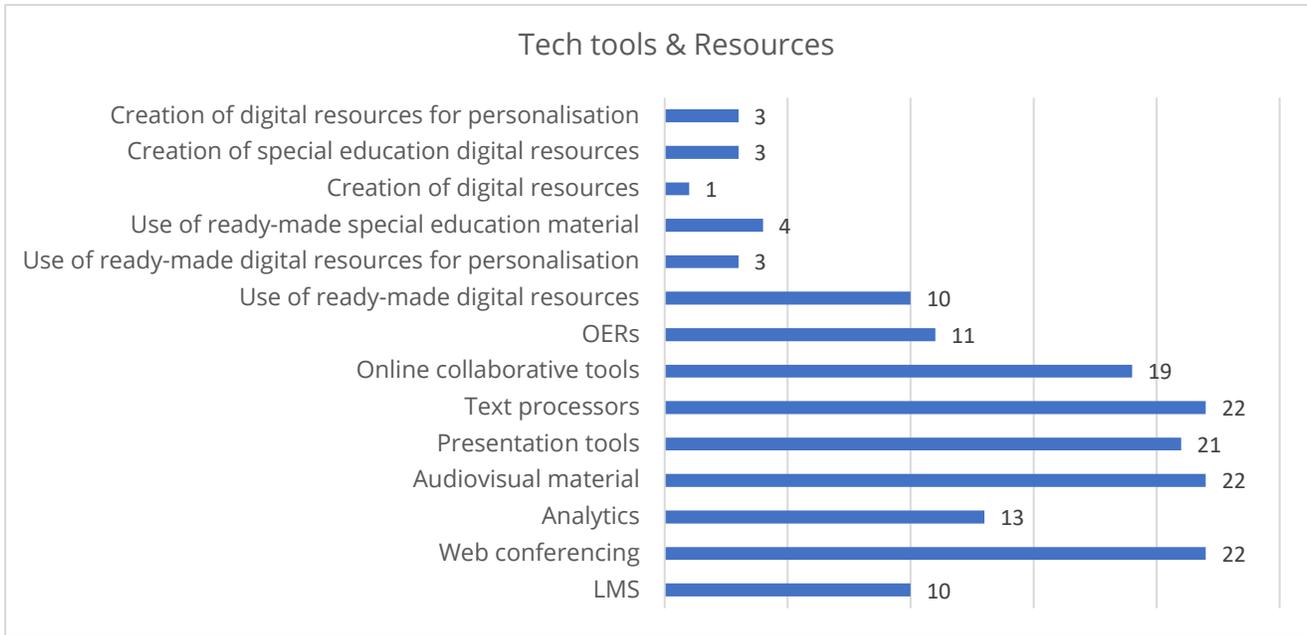
Figure 36. Frequency of participants' choices about which tools/resources are used and content-creation approaches are followed

As far as students' digital skills are concerned, participants mostly agreed that there were activities to develop these competencies (88%). These are mostly focused (Fig. 37) on how students can behave safely (21) and responsibly (19) as well as how to communicate (19), create digital content (18) and develop digital skills (17).
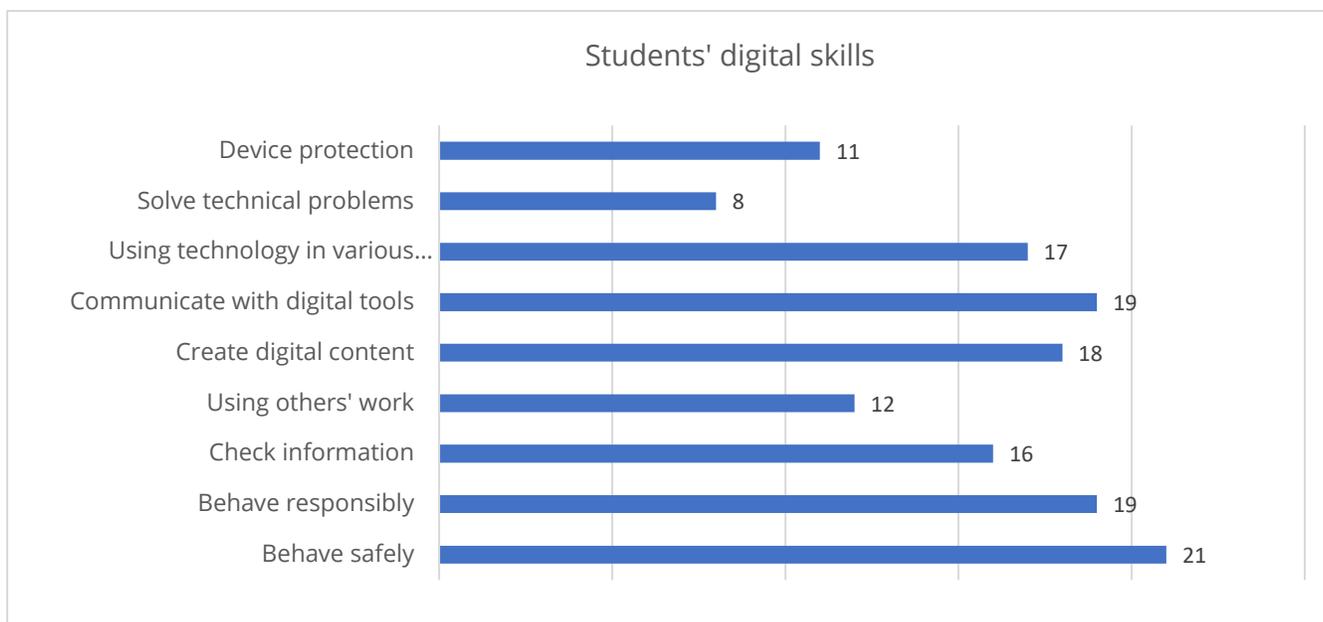
Figure 37 . Frequency of participants' choices about which students' digital skills are developed.

The last question of the questionnaire investigated the challenges of online learning that participants might have faced (Fig. 38). The obstacles were mainly technical: low-quality/low-speed Internet connection (15) and inadequate devices (6). Other obstacles mentioned were the lack of skills in preparing an online lesson (7) and difficulties in managing an online course (7). Some (4) stated that there were budget restrictions to access adequate teaching material and that there was a resistance in adopting innovation (7).

Challenges/difficulties

Challenge/difficulty	Value
Budget restrictions for teaching material	31
Administration	2
Online classroom management	22
Digital content in national language	7
Digital content	4
Resistance in innovation	8
Skills in preparing online lessons	13
Skills in using digital tools	8
Training	3
Devices	23
Internet connection	33
Technical support	24

Figure 38. Frequency of participants' choices about the challenges/difficulties they face.

2.4.2 Results from the focus group

Doukas School was able to acquire thorough information regarding the techniques used at secondary schools in Greece while adopting remote learning by holding a focus group. The focus group was based on semi-structured interview questions that investigated key issues in the field of online distance education, such as infrastructure requirements, cooperation practices and professional growth, online educational techniques, and digital competencies. The proc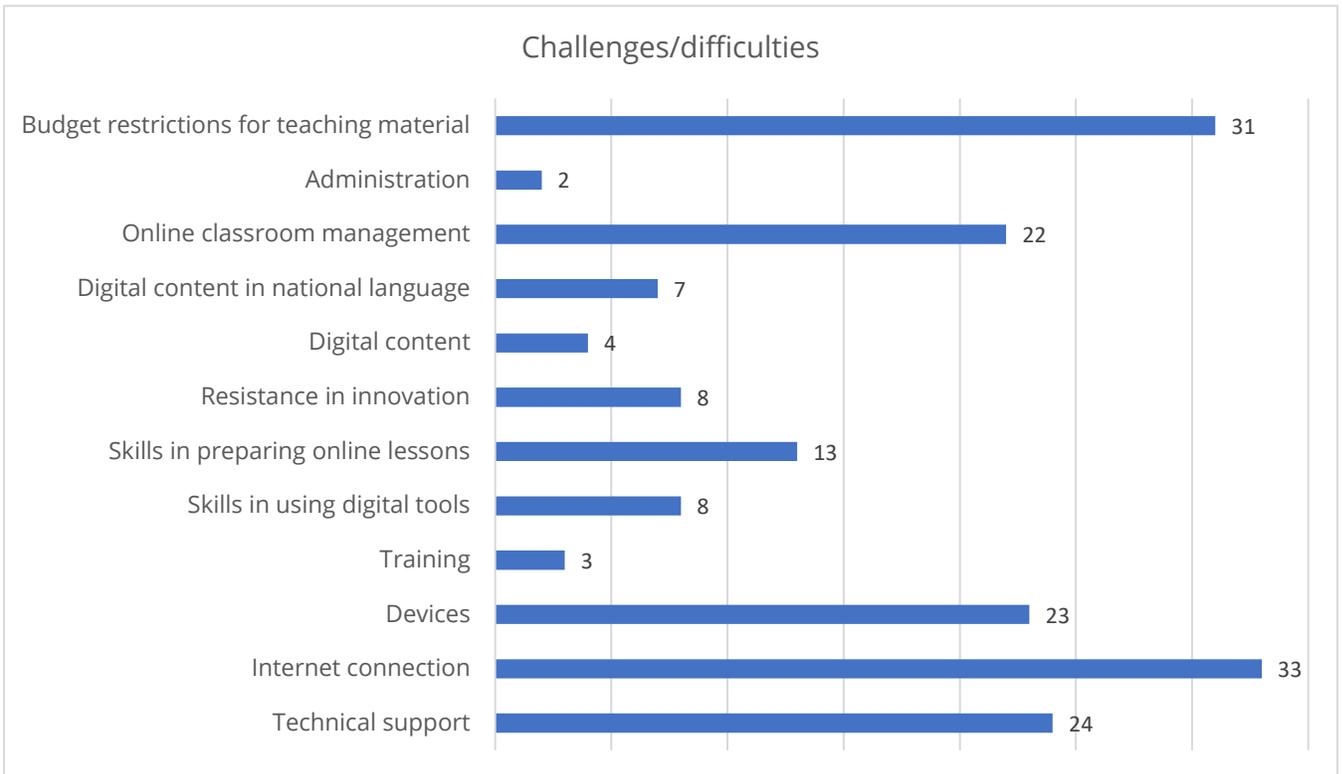edure went smoothly, and the conversation brought up some interesting points. Instead of signing consent forms, participants were told about the meeting's recording and agreed to the GDPR alignment in regard to the keeping of the data, the research purpose of its use, the ability to ask to erase any information relating to them, etc. As a result, there is documentation that the participants agreed to be recorded for transcribing reasons and were informed that following the development of this report the recorded video would be deleted.

2.4.2.1. Profile of the participants

The focus Group was held on Thursday, November 11, 2021, with thirteen participants. Participants included engaged instructors, persons with extensive educational background, and educational leaders. Their areas of competence varied, encompassing a wide range of school-taught disciplines. Their experience was largely documented through emergency remote instruction during the Covid-19 period.

2.4.2.2 Main Findings

To analyse the qualitative data, we revealed the hidden patterns of the focus group. There were six (6) themes prominent (Table 10).

Table 10. Categories and themes from the data analysis

Themes
Infrastructure needs
Communication practices
Useful tools
Measures for equity and support
Data protection measures
Evaluation and improvement

Infrastructure needs

Most participants agreed upon and started by mentioning that more important than the software itself, based on their own experiences and those of colleagues that were discussed among them, was the availability of the ICT staff on the school premises that was always available, ready to quickly respond to the teachers' needs. Another participant, added, and the rest agreed, that the smooth and efficient operation of the Wi-Fi played an important role, and where not evident, issues arose, that were almost impossible to tackle. Therefore, equipment and software tools are of no use if the basic infrastructure is not operating properly. In relation to the tools, teachers stated that it was important that they were extensively engaged in peer working teams, exchanging ideas and practices, throughout the online learning period, and this gave them a platform to discuss the use of on-line tools, and most importantly, being able to discuss the full process of integrating any new tool to their lesson. Teachers at public schools, on the other hand, had a different experience. During the epidemic, they said that public schools were not prepared for online instruction at all, and that a shortage of equipment (laptops, tablets) forced them to utilize their own devices.

Communication practices

Although the communication was more difficult in the beginning, eventually it became more direct, balanced, and organised according to some participants. Overall, teachers' opinion was positive about the digital tools, and they stated that they are here to stay, as part of their educational effort. They noticed an increase in the participation of some students that didn't pay that much attention during face-to-face lessons. Another point that was made, was the better communication with the students' parents and their active role in helping their children's growth, with the emergency use of these digital tools. Educators in the public sector indicated that there was little communication between pupils, their parents, and them, save on the most basic level. They were largely using WebEx, e-me, and e-class, although there was some denial and tiredness on the part of the learners. It was observed that small groups of educators on social media forming teams aided much in the rapid dissemination of good practices, which aided more than the Ministry of Education, which was cumbersome and late.

Useful tools

The useful digital technologies that were mainly mentioned were besides the hardware (e.g., laptops, mobile phones, precision stylus):

- Teams
- Forms
- Power Point
- Flashcards

- Padlet
- Kahoot!
- Minecraft
- WebEx
- E-class
- E-me.edu.gr
- Skype
- Zoom
- One-note
- Notability

Most of the challenges that participants faced during this transition, had to do with keeping the online lesson interesting enough for the students. For the teachers who were experienced with technology, the most challenging obstacles were the monotonous nature of online video conferences, the search for interactive tools and the need to adapt to the students' way of thinking. The lack of live socialisation, playing, even trick, challenges teachers to find fun and "childish" ways of instructing, to balance out the psychosocial dimension of students and keep the socio-emotional aspect alive.

Measures for equity and support
According to educational professionals, there are no measures or assistance for kids. They utilized personal equipment that they owned at home. One participant said that in the early days of online teaching, some instructors just taught the same way they would in a live classroom, with the addition of a camera in front of them. Participants reach the conclusion that much planning and labor are required for high-quality e-learning. Political will is needed complementary to scientific approaches.

Data protection measures
The educational leaders cited a complete lack of data protection procedures. It was also reported that there were copyright difficulties. Teachers were left without assistance and were forced to use instructional materials that lacked licenses, permits, and sources. Teachers were concerned about the recording of online sessions, and all participants felt that data protection should be prioritised.

Evaluation and improvement
There was no evaluation, according to public school instructors, but even if there was, it would cause anxiety and no correspondence. They had so many difficulties merely understanding the fundamentals and using digital technologies that the proper utilisation of

them and educational techniques became secondary priorities. It was a success that people learnt to utilize systems like WebEx without any prior experience.

Suggestions for improvement:

- Provide and employ appropriate and dependable infrastructure (equipment, tools, Internet access) to meet the demands of instructors, support personnel, parents, and students. This means that everyone should have equal access, regardless of their background (e.g., socioeconomic status).
- Provide all individuals engaged with effective, hands-on training. Training should place an emphasis on the development of digital competencies while encouraging creativity in the pedagogies used.
- Use assessment methodologies, to analyse the success of online learning. As a result, all practices may be altered as needed, either during or after the implementation phase (e.g., end of school year). Formative evaluation (e.g., informal talks among leaders-teachers) during the semesters is an important proactive tool.
- Facilitate collaboration and communication among schools, regulatory agencies, instructors, research centers, practitioners, student and parent communities, and others. Reciprocal engagement reveals problems and difficulties while encouraging the exchange of concerns, ideas, and best practices.
- Create an action team of professionals that will give ongoing administrative, technical, and emotional assistance to all participants.

2.5 Ireland

2.5.1 Results from the questionnaire

Thirty (30) secondary school teachers completed the survey from two local schools, namely St. Bricin's Secondary School and Eureka Secondary School. Teachers were contacted in advance of the launch of the survey and introduced to the EUVHS project and in total 62 teachers were invited to participate in the survey. Following the e-launch of the survey, follow-up communication, emails and face-to-face meetings were implemented in order to achieve the target of 30 completed responses from Irish teachers. The result of the surveys is presented below.

2.5.1.1. Profile of the participants

Based on the results (Fig. 39, Fig. 40), 53% of respondents were female and 47% male. 40% of teachers completing the survey were under 30 years of age, with the remaining as follows: 20% between 31-35 years, 13% between 36 - 45 years and the remaining 27% between the ages of 46 to 55 years old. 94% of respondents were teachers in state-funded public schools with the remaining 6% (2) participants holding leadership positions with the schools. 40% (12) of teachers had obtained a master's degree with the remaining 60% (18) obtaining a bachelor's degree or equivalent.
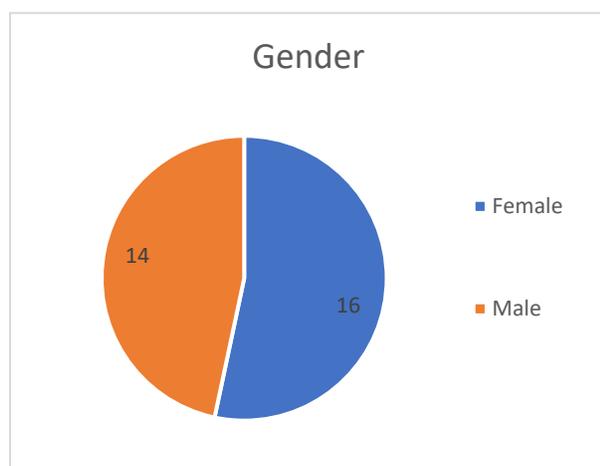
Figure 39. Participants' gender in frequency
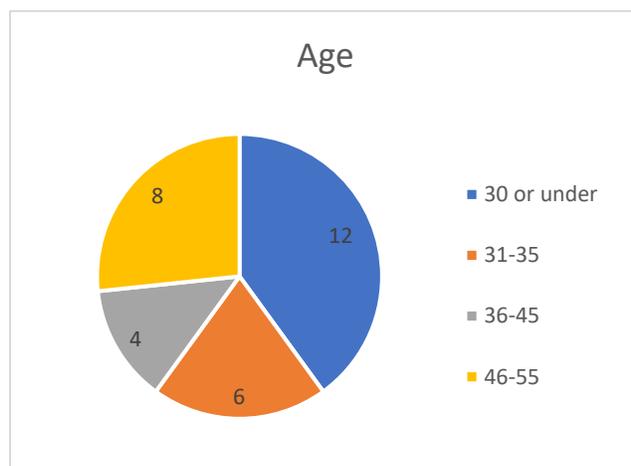
Figure 40. Participants' age in frequency

40% of teachers had only been teaching for less than 5 years which corresponds to the age profile of the respondents. All other respondents had a greater level of teaching experience.

The participating teachers were teaching a range of subjects such as: chemistry, maths, biology, information technology, environmental science, business studies, foreign languages, art, engineering, graphic design, history, and special education.
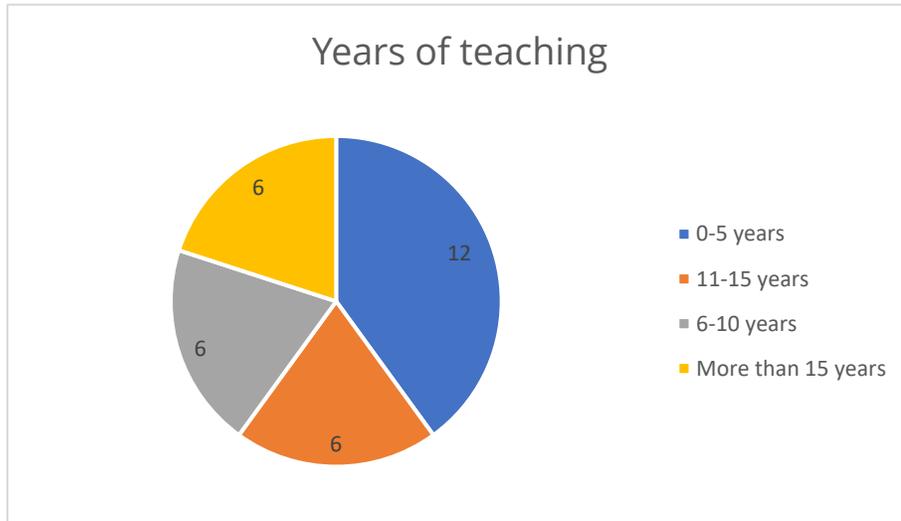
Figure 41. Participants' years of teaching experience in frequency

2.5.2.2 Main Findings

Participants were asked about the presence of a Digital Strategic Plan for the use of digital technologies in their respective schools; the majority of teachers (20) said that there was a digital plan in place, 4 indicated that they did not have one in their school and the remaining teachers did not know. When asked if teachers, learning designers and leaders work together to review the progress of online teaching and learning, the majority of teacher's (20) agreed that this was the case for their school. The remaining participants said they were unsure or that there were no collaborative review processes in place to monitor progress for this area.

Participants were asked did they feel their school has adequate equipment to facilitate online learning. Over 50 % of participants felt their school was inadequately equipped and resourced to facilitate online learning. Moreover, 94% of participants (28) agreed that there was adequate technical support in case of issues with digital technologies and that there were relevant Data Protection guidelines present in their school. Two participants were unaware of these and not in a position to answer fully.

Additionally, 24 participants agreed there are measures in place to allow all learners to access online learning, such as (Fig. 42) provision of devices, for students to use (20). The remaining were unsure or disagreed. The teachers that agreed with this statement, explained that they had the use of digital tools like iPads for the students to take home, or they used online tools such as Microsoft teams to connect with students.
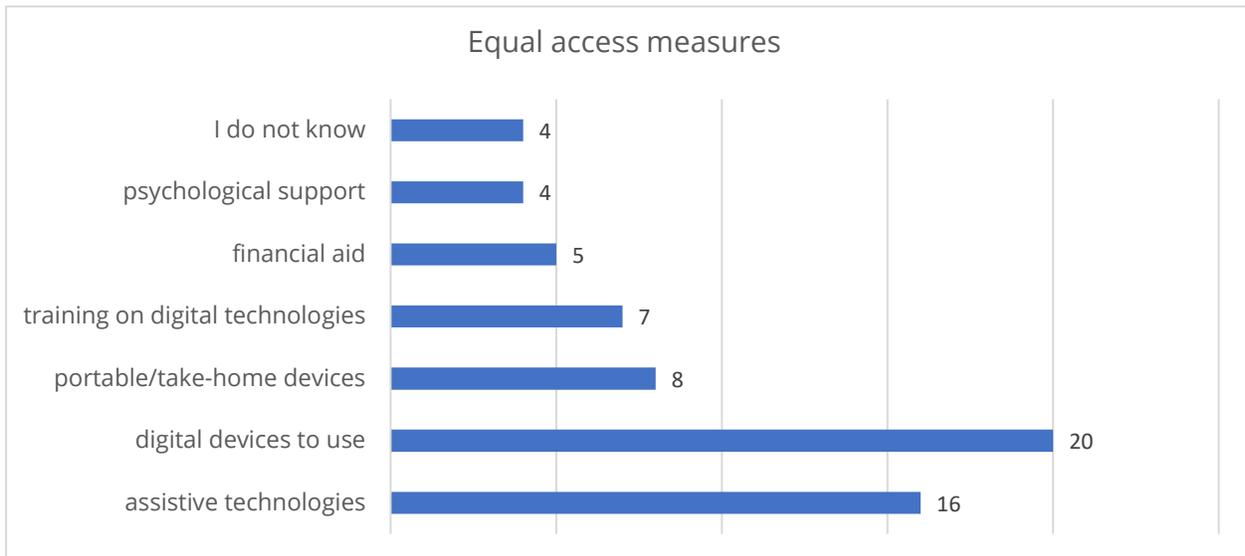

Figure 42. Type of measures providing all learners with access to online learning

Most participants (90%) agreed there is an online platform that all participants (school staff, parents, students) use for school-related communication. Participants were asked if

there are partnerships with other schools or organisations (universities, research centres, businesses) to support the use of digital technologies - 14 teachers agreed that there are partnerships in place; while the remaining 16 were unsure or indicated that there were none in place.

Regarding the Continuous Professional Development opportunities (Fig. 43), 22 participants agreed that there was such support. Most participants felt that there was support for teachers to learn from other colleagues (teachers and support staff) within the school through both online and offline collaboration. There was also support available from colleagues through online teachers' networks or communities of practice, in-house training sessions organised by the school (e.g., workshops by the ICT Coordinator or observing colleagues teaching). They also felt that there were opportunities to attend face-to-face courses, seminars, conferences or online courses and webinars. However, there was an acknowledgement that the pandemic had made it difficult for teachers and interrupted many CPD opportunities as more CPD is offered in face-to-face formats and this training had been cancelled or postponed until future dates.

Professional development opportunities

Category	Value
Accredited courses	0
Study visits	0
In-house training sessions	9
In-house mentoring/coaching	7
Online commuties of practice	10
Learning from colleagues	10
Online training courses, seminars, conferences	6
Face-to-face courses, seminars, conferences	17

Figure 43. Frequency of participants' choices about the professional development opportunities provided

22 teachers' felt they did not have sufficient time to dedicated to their own online learning, due to the demands of the national curriculum that they had to deliver, especially for those teaching state exam classes (3rd and 6th year students). The four most common approaches to online teaching and learning were cited as follows (Fig. 44):

- 80% - traditional direct instruction (delivery of content by the teacher and acquisition of content knowledge by the students),
- 63% - collaborative learning (students are involved in joint intellectual efforts with their peers or with their teachers and peers) and,
- 63% - project-/problem-based approach (learning through the investigation of real-world challenges and problems
- 60% - formative assessment (assessing learners throughout an online lesson, unit, or course).

Teaching methods applied

Method	Value
I do not know	
Formative assessment	18
Authentic assessment	4
Reflection	9
Peer-to-peer feedback	11
Collaboration	19
Interdisciplinary	9
Personalised	13
Inquiry-based	11
Project-based	19
Direct instruction	24
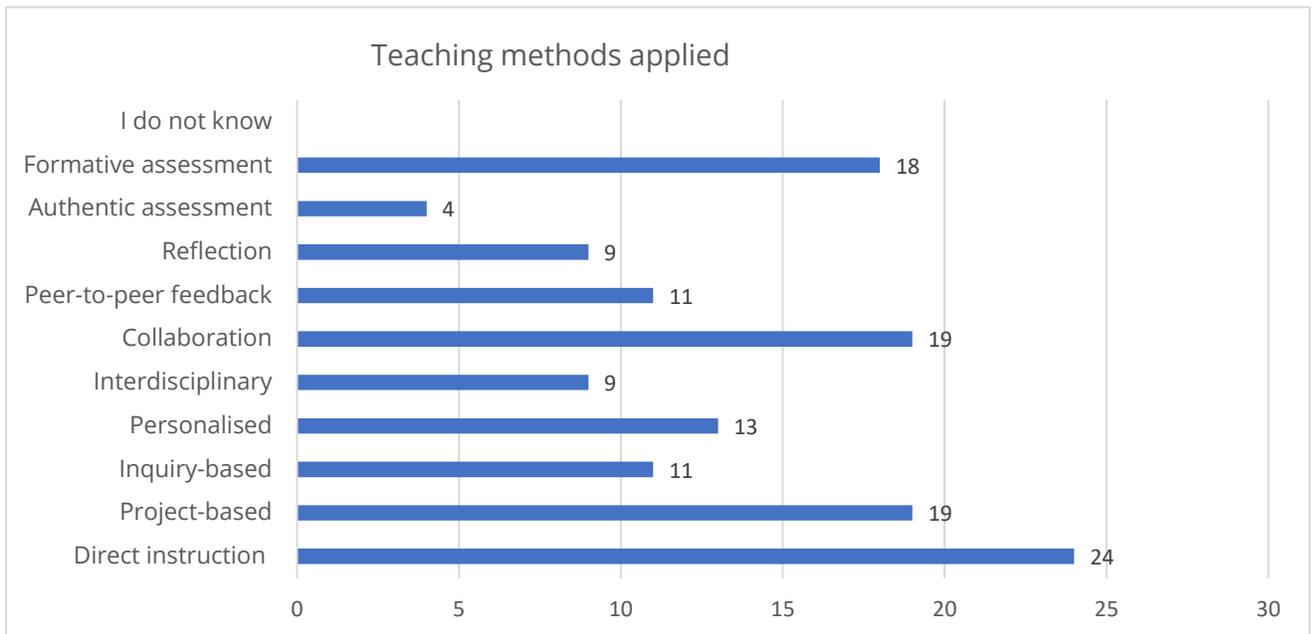
Figure 44. Frequency of participants' choices about which teaching methods are used

When asked which tools teachers used for online teaching and learning (Fig. 45), web conferencing tools (e.g., WebEx, Zoom, Microsoft Teams, etc.) were most popular, followed by audio/video materials, word processors (e.g., MS Word, Google docs) and then digital presentations (MS Power Point, Google Slides, Prezi etc.).
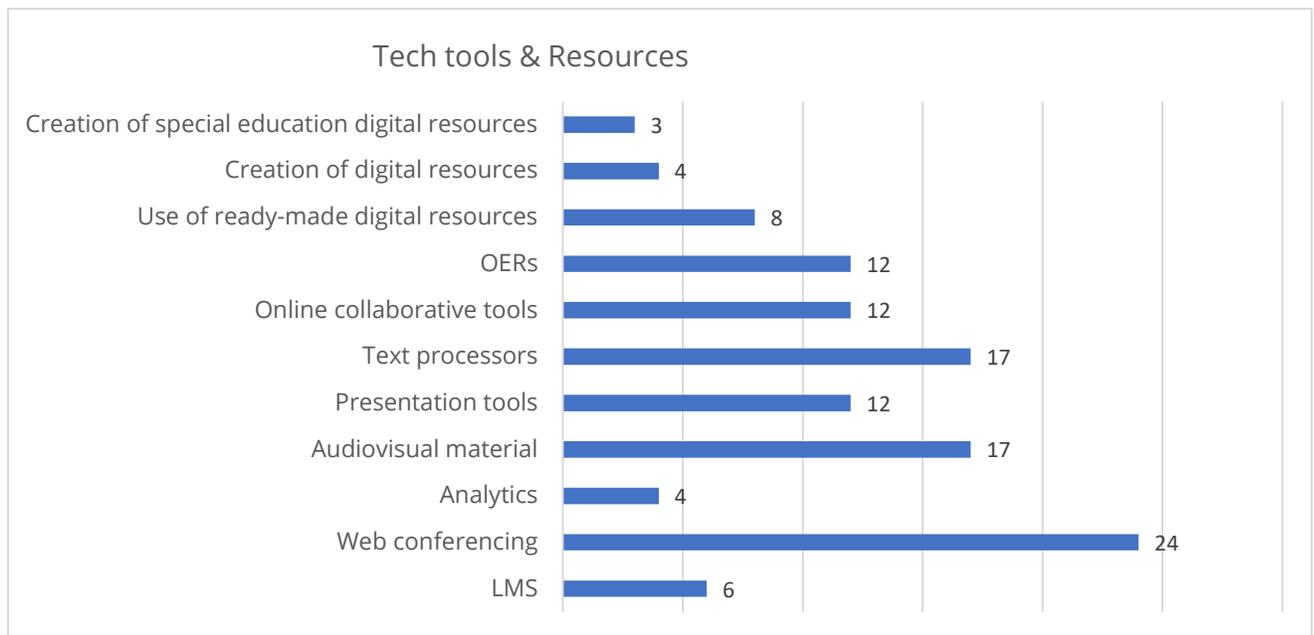
Figure 45. Frequency of participants' choices about which tools/resources are used and content-creation approaches are followed

Most of the teachers that completed the survey (24) agreed that there are learning tools online to support a student to enhance their skills, with the most common skills developed as follows (Fig. 46):

- how to behave safely online
- how to behave responsibly and respect others online
- how to check that the online information is reliable and accurate
- how to communicate using technology and,

- how to develop digital skills across subject areas.
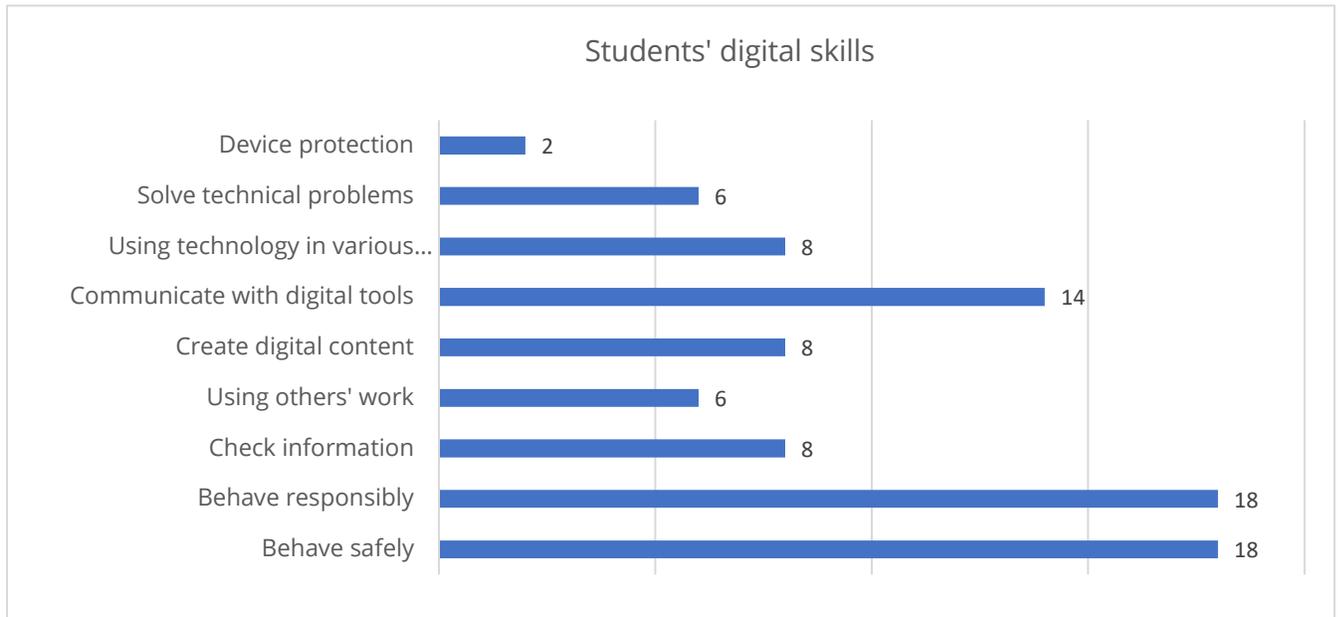
Figure 46. Frequency of participants' choices about which students' digital skills are developed.

Across the 30 teachers surveyed, the challenges were relatively consistent across the two schools surveyed (Fig. 47):

- Insufficient Internet bandwidth or speed
- Lack of adequate training/professional development
- Lack of skills in using digital tools
- Difficulties in managing an online class
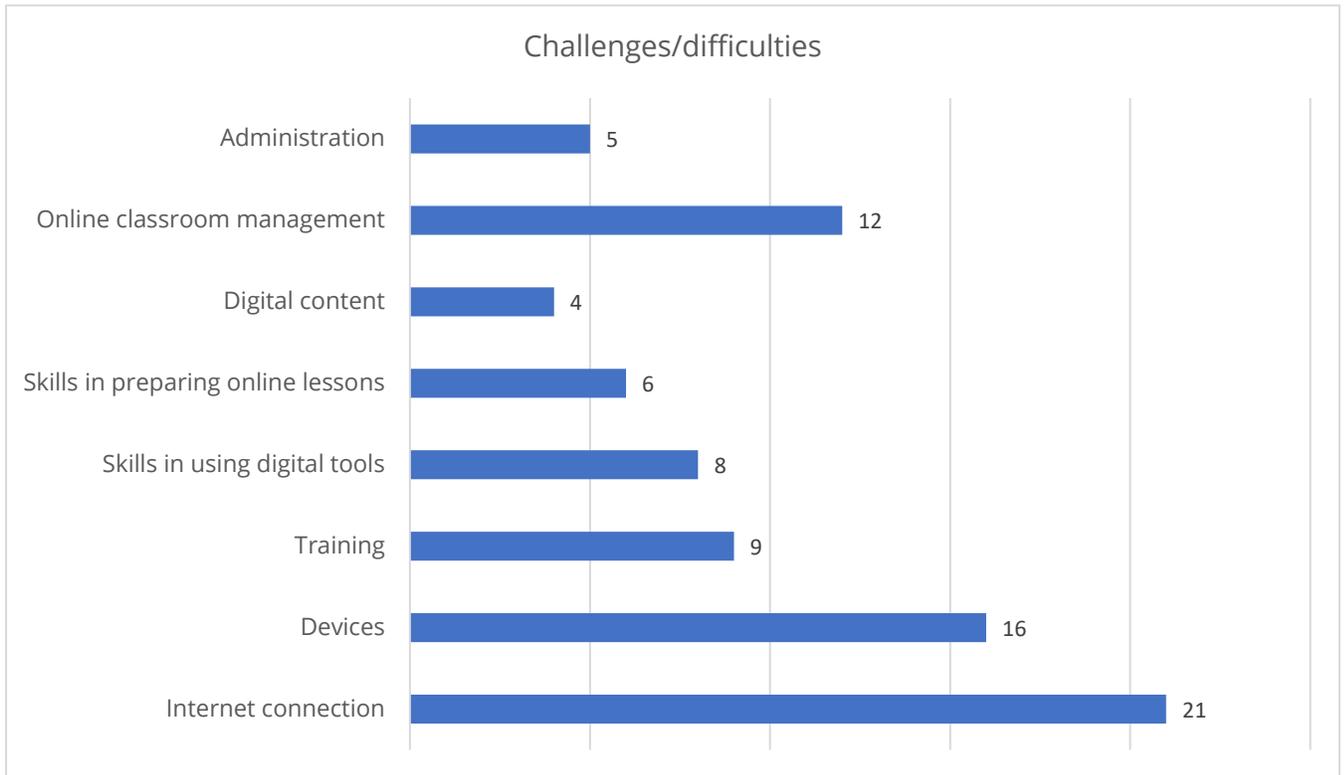
Figure 47. Frequency of participants' choices about the challenges/difficulties they face.

2.5.2 Results from the focus group

The focus group session was organised with five teachers from the two schools: three teachers from St. Bricin's Secondary School and two teachers from Eureka Secondary School. The focus group was completed in a face-to-face small group session and lasted approximately 40 minutes.

2.5.2.1. Profile of the participants

- 3 participants were male and between the age of 25-35 years
- 2 participants were female and between the age of 35-50 years

2.5.2.2 Main Findings

To analyse the qualitative data, we revealed the hidden patterns of the focus group. There were seven (7) themes prominent (Table 11).

Table 11. Categories and themes from the data analysis

Themes
Teaching challenges
Pedagogical approaches
Resources for online teaching
Learners' digital skills
Communication
Continuous professional development
Measures for support

Teaching challenges
All teachers present agreed that it was difficult for teachers to find the time to research and explore the online learning platforms, as the teaching demands of the national curriculum takes priority. One teacher mentioned that he has no time to do extra training on this topic due to the current staffing shortages within the school as a result of Covid-19 – teachers are either sick themselves or out of work as they are close contacts to those infected. This situation was placing extreme pressure on the teaching resources within the school and often meant that time for non-teaching activities were on hold. All teachers in the focus group agreed that the biggest challenge for them was trying to find creative ways to adapt the current curriculum and learning resources to incorporate online tools and platforms

while still maintain high levels of student engagement. One teacher mentioned that she struggled to engage some students during the pandemic as the students experienced poor internet connectivity in their homes and that there were little alternatives available to those students. All teacher present agreed they faced similar connectivity challenges with online learning also.

Pedagogical approaches and assessment

Most of the group explained that their approaches still relied upon direct task learning and inquiry-based learning approaches with students online. One teacher mentioned she found using self-directed learning and reflection exercises useful for her students as she could follow-up with an informal assessment of what they have learned. All teachers agreed that using apps such as Kahoot and Padlet were useful tools to keep engagement high and draw out interaction from students as retaining students' attention on Microsoft teams or Zoom was difficult at times. Moreover, two of the teachers agreed that they used more informal feedback by speaking to each student weekly on their progress and doing check-in calls with them on their homework and assignments. Other teachers agreed that using quizzes and polls such as those created on Mentimeter as useful tools to record and document the assessment of learning in a more engaging way. One teacher explained how she used StoryBoard - an app to review students' progress and assign tasks.

Resources for online teaching

All teachers agreed that they mainly used resources created by themselves or collaboratively as a team of peers, as they had to adapt their current curriculum to suit online platforms and virtual teaching. Weekly staff meetings were used by teachers to discuss their online teaching experiences, what worked well and what didn't work, whereby it became a collaborative learning experience for them. They used many apps like Padlet, Mentimeter, Kahoot, Thinglink, StoryBoard and Microsoft teams.

Learners' digital skills

The Department of Education in Ireland provides resources to schools to ensure that there are adequate materials for teachers to use with their students on the subjects of online safety, cyberbullying and how to create your own media content. One teacher explained how her students made videos to tackle online bullying within their local community. The teachers agreed that there is still more work to be done in this area to ensure students are gaining this knowledge from primary school onwards. The teachers also said how they want to continue to use a blended learning approach of face-to-face and online learning, in a post-

pandemic era, so that they don't regress and lose the progress they have achieved in enhancing their own technical, content and teaching skills.

Communication

Yes, all teachers agreed that they use a very collaborative approach with other teachers and peers when it came to sharing materials and creating lesson plans. Both schools, are using an online platform to support teacher communication and it also acts as a repository for learning resources that can be shared across the school. One teacher commented that having more time to do this would be beneficial to all teachers as learning from each other is most beneficial and very helpful. They placed a huge value on the peer-to-peer learning approach.

Continuous professional development

All teachers were given the opportunity, at the outset of the pandemic, to complete online training focussing on the use of digital tools to support remote and virtual learning. Two teachers spoke about how they wished they had more training in the area of digital tools and technologies before the pandemic, as they found it very difficult at the beginning to adapt to this new model of teaching and that it was very much a reaction to the situation rather than a strategic training approach. In what was a very stressful period for everyone, including teachers, having to pivot to this style of teaching in such a short period of time was quite challenging.

Measures for support

All teachers agreed that there is a need for more support for online teaching, and more time needs to be allocated for teachers to complete this training in order to further their continuous professional development. They also noted that they were aware of the lack of funding for some schools in this area and that how a number of local schools where under-resourced having very little IT equipment within their schools for either teachers or students. They all agreed that the Government must direct more funding to this area, look at more creative models for teacher training that are both time efficient and focused on the development of technical and pedagogic skills and finally technology needed to be integrated more into the national curriculum for both primary and secondary education.

Conclusion

Although there were initiatives for integrating technology and virtual schooling, The shift from traditional methods to modern online pedagogies requires relevant preparation. schools need to redesign the curricula to incorporate innovative pedagogies supported by the affordances of technology. Integration of virtual schooling requires adequate and reliable infrastructure adapted to fit the limitations and capabilities of online instruction. This means that access to all should be ensured, regardless of the participants' background (e.g., socioeconomic status). In addition to that, assistive technologies should be present to support special needs pupils, while emotional support is available to all those involved. Researchers report that schools are responsible for facilitating an ongoing communication with learners and parents at home.

Moreover, specific funding should be allocated to develop teachers', students', and parents' digital skills. Emphasis should be given on the practical nature of training, especially for pre- and in -service teacher training. The content of the training should explore both technological (e.g., tools, technical issues, etc.) and pedagogical dimensions (e.g., approaches, resources, etc.), including methodologies of online teaching. In addition, the creation and maintenance of online communities, as an informal type of development, will work as a complement. To achieve the above, there should be an ongoing communication among all key stakeholders and authorities (e.g., the Ministry of Education) with continuous review, monitoring, and evaluation across the whole spectrum of distance education. This kind of interaction constantly provides insights into the current state and situation that learners, teachers, and parents are experiencing. An action team of experts, if appropriately established, can provide constant support - administrative, technical, emotional- to all the participants.

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Annex 1

Questionnaire items

Title: Virtual Schooling: practices, challenges, and needs of secondary education

Description-Intro page

This survey is conducted as part of the Erasmus+ Project "A framework for the design and implementation of European Virtual ScHoolS" [Project number: 2020-1-DE03-KA226-SCH-093410]. The EUVHS project aims to build the capacities of secondary school leaders, teachers, and eLearning practitioners in designing, developing, and delivering effective online courses. For this reason, a partnership of schools, non-governmental research centres/organisations and a university has come together to provide frameworks and systemic approaches to address distance and online education. The project foresees the development of a practical Toolkit, two training courses, and a MOOC, to be freely accessible by all interested parties.

To better understand the current teaching practices, needs and challenges regarding online learning in secondary education, we ask school leaders, teachers, eLearning designers and school support staff to provide us with some feedback through this survey. We kindly ask you to answer honestly and base your answers on your experiences with online learning in your school. The estimated time to complete this questionnaire is 10 minutes.

GDPR: All data gathered through this survey, will be strictly used explicitly for the research. The responses will be handled in a discreet manner, and responses are completely anonymous. The answers will be saved in a properly secured place, with no authorization to anyone apart from the Research Team. Our consortium complies with the GDPR regulation and the protection and processing of personal data.

Consent*

By clicking the "Agree" button, you indicate that you have read all the information above, the privacy policy, you agree to participate voluntarily, and you are at least 18 years old. If you do not wish to participate in this survey, please click the "disagree" button.

- Agree
- Disagree

Section A: Demographic data

1. Gender:

- Male
- Female
- Non-binary
- I prefer not to say

2. Age:
- 30 or under
- 31-35
- 36-45
- 46-55
- Over 55

3. What is the type of your school?
- State/Public

- Private
- Other (please specify):

4. What is your job position in the school?
- Teaching
- Leadership
- Learning/Instructional design
- eLearning development
- Other (please specify):

5. Choose the school level you work most hours during the current school year.
- Lower Secondary Level (12 to 15 years old)
- Upper Secondary Level (15 to 18 years old)

6. Highest degree of formal education you have obtained:
- High school diploma
- Professional diploma
- Bachelor's Degree or equivalent
- Master's Degree
- Doctorate
- Post-Doctoral
- Other (please specify):

7. How many years have you been teaching?
- 0-5 years
- 6-10 years
- 11-15 years
- More than 15 years
- Non applicable

8. Choose the subject(s) you are teaching this school year:
- Art
- Biology
- Chemistry
- Environmental/ Earth Sciences
- Foreign languages
- Information and Communication Technology -ICT
- Literature
- Math
- Music
- Physical Education
- Physics
- Special Education
- Theatre
- Other (please specify):
- Non applicable

Section B: Leadership and infrastructure

1. There is a strategic plan for the integration of digital technologies in our school.
- Yes
- No
- I do not know

2. Teachers, learning designers and leaders work together to review the progress of online teaching and learning.
- Yes
- No
- I do not know

3. My school has adequate equipment (digital tools) to facilitate online learning.
- Yes
- No
- I do not know

4. Technical support is available in case of problems with digital technologies.
- Yes
- No
- I do not know

5. There are data protection systems in place.
- Yes
- No
- I do not know

6. There are measures to provide all learners with access to online learning.
- Yes
- No
- I do not know

7. If yes (question 6), which of the following (select all that apply):
- assistive technologies for students in need of special support
- school-owned/managed digital devices for students to use
- school -owned and managed portable devices that students can take home
- training on how to use digital technologies
- financial aid
- psychological support
- I do not know
- Other (please specify):

Section C: Collaboration and professional development

1. There is an online platform that all participants (school staff, parents, students) use for school-related communication.
- Yes

- No
- I do not know

2. There are partnerships with other schools or organisations (universities, research centres, businesses) to support the use of digital technologies.
- Yes
- No
- I do not know

3. School staff (teachers and learning designers) have opportunities for continuous professional development in online/remote teaching.
- Yes
- No
- I do not know

4. If yes (question 3), which of the following (select all that apply):
- Face-to-face courses, seminars, or conferences
- Online courses, webinars, or conferences
- Learning from other colleagues (teachers/ support staff) within the school through online or offline collaboration
- Learning from colleagues through online teachers' networks or communities of practice
- In-house mentoring or coaching, as part of a formal school arrangement
- Other in-house training sessions organised by the school (e.g., workshops by the ICT Coordinator or observing colleagues teaching)
- Study visits (e.g., to other schools, universities, research centres, organisations, etc.)
- Accredited programmes (e.g., short, accredited courses, degree programmes)
- I do not know
- Other (please specify):

Section D: Teaching and learning practices

1. Teachers have time to explore how to improve their online teaching.
- Yes
- No
- I do not know

2. Which of the following approaches are used for online teaching and learning?
- Traditional direct instruction (delivery of content by the teacher and acquisition of content knowledge by the students)
- Project-/Problem-based approach (learning through the investigation of real-world challenges and problems)
- Inquiry-based learning (students pose questions and concerns to which they find solutions through investigation and experimentation)
- Collaborative learning (students are involved in joint intellectual efforts with their peers or with their teachers and peers)
- Cross-curricular instruction (combination of multiple school subjects, e.g.,English with Math)
- Peer feedback (students have opportunities to provide feedback to other students)

- Personalised learning (teaching and learning are tailored to meet students' individual interests and aspirations as well as their learning needs)
- Self-reflection on learning (learning activities allow students to reflect on their own learning progress)
- Formative assessment (assessing learners throughout an online lesson, unit, or course)
- Authentic assessment (portfolios, real-world tasks to be solved, collaborative assessment, etc.)
- Other (please, specify):

3. Which of the following tools and resources are used for online teaching and learning?
- Learning management system (e.g., Moodle, Google Classroom, Blackboard etc.)
- Web conferencing tools (e.g., WebEx, Zoom, Microsoft Teams, etc.)
- Learning analytics and digital data (e.g., time students take to complete a task in a platform, etc.)
- Audio/video materials
- Digital presentations (MS Power Point, Google Slides, Prezi etc.)
- Word processors (e.g., MS Word, Google docs)
- Online collaborative tools (Padlet, Mentimeter, Kahoot, Quizlet, etc.)
- Use of Open Educational Resources
- Use of ready-made digital resources
- Use of ready-made digital resources for special needs learners
- Use of ready-made digital resources for personalised learning
- Creation of digital resources
- Creation of digital resources for special needs learners
- Creation of digital resources for personalised learning
- Other (please, specify):

4. There are learning activities that allow students to develop their digital skills.
- Yes
- No
- I do not know

5. If you answered yes (question 4), which of the following skills?
- how to behave safely online.
- how to behave responsibly and respect others online.
- how to check that the online information is reliable and accurate.
- how to use others' work they find online.
- how to create digital content.
- how to communicate using technology.
- how to solve technical problems when using technology.
- how to develop digital skills across subject areas.
- how to protect the devices (e.g., using anti-viruses, passwords) to avoid internet-related threats.
- I do not know
- Other (please specify):

6. Which of the following challenges do you face during online teaching and learning? (select all that apply)
- insufficient technical support
- Insufficient Internet bandwidth or speed
- inadequate devices
- lack of adequate training/professional development
- lack of skills in using digital tools

- lack of skills in preparing online lessons
- resistance in adopting innovative online teaching methods
- lack of digital content to use for online teaching
- lack of digital content to use in national language
- difficulties in managing an online class
- administrative organisation (schedule, communication etc.)
- budget constraints in accessing adequate content/material for online teaching
- I do not know
- Other (please specify):

Other comments/suggestions:

Thank you for your participation.

Annex 2
Focus group questions

Please adjust (remove, add, edit) the below suggested list of semi-structured questions based on your target group needs.

PART I – ALL PARTICIPANTS

1. Does your school have adequate infrastructure to facilitate online education (e.g., equipment, software, information resources, internet connection, technical support)? Is the infrastructure reliable?
2. How is school-related communication facilitated among teachers, students, and parents during online/remote teaching?
3. In your school, which types of digital technologies do you find very useful for communication, teaching and learning online? (e.g., online platforms, web conferencing tools, etc.)
4. Are there specific measures to provide all students with access to online education? (e.g., assistive technologies, specific devices, training, emotional/ financial aid etc.). What kind of support do students have when learning online?
5. Are there specific measures for data and device protection?
6. Is there an evaluation method for the use of digital technologies? (e.g., discussions among the principal/teachers/students/parents, surveys, an external evaluator, etc.)
7. What improvements would you suggest for successful online education?

PART II – Principals/ leadership teams

1. Do you follow a specific strategy for integrating digital technologies? If yes, what kind of measures does the plan include (e.g., actions for equipment, digital communication, teaching, assessment etc.)? Which people are involved in the development of the strategy (e.g., teachers, eLearning designers etc.)?
2. Do you collaborate with other schools or organisations (universities, research centres, businesses) to support the use of digital technologies in online education?
3. In which ways do you support teachers to implement online/remote teaching? (e.g., technical support, continuous professional development programmes etc.)?
4. Is there a plan to help teachers deal with challenges that arise with remote teaching and learning, related to students' learning needs and socio-economic background?

PART III – Teachers

1. What are the biggest challenges that you face when it comes to online teaching?
2. Which pedagogical approaches are you using in your online teaching? (e.g., Project-/Problem-based approach, collaborative approach, inquiry-based learning, cross-curricular, personalised etc.)
3. How do you assess your learners online? (e.g., formative/summative, closed-ended questions quizzes). How do you provide feedback to them?

4. What kind of resources do you use for your online classes? (e.g., ready-made material the school provides, you work with an eLearning designer to create the material, or you design your own?).
5. Do you integrate learning activities that enhance learners' digital skills? (e.g., focus on how to behave safely online, how to find accurate information, how to create digital content, etc.)
6. Do you communicate with colleagues (from your school or others) to co-create or share resources, material, and lesson plans for online teaching?
7. Does the school provide you with opportunities to participate in continuous professional development for teaching online/remotely? If yes, what kind of opportunities? (e.g., face-to-face, or online seminars, workshops, courses, in-house training etc.)
8. Do you need additional support regarding online teaching? If yes, what kind of support? (e.g., financial support, continuous professional development, access to tools and resources, industry visits etc.).

Annex 3

Focus group consent form

I _____, hereby declare that:

- I consent to participate in the focus group, organised by [insert your organisation's name], in the context of the Erasmus+ European project "OnlineHE: A practical toolkit for integrating elearning in Higher Education Curricula" [Project number: 2020-1-RO01-KA226-HE-095434] that aims to develop HE staff's skills in designing, developing, and delivering effective online courses.
- I have been informed about the project and I have understood what the project is about and what it aims to achieve.
- I have been informed that the discussion will be recorded and that photos will be taken and that the recording and photos will be solely for internal use by the researchers for the recording and analysis of the data.
- I may choose not to answer any of the questions that I will be asked and may stop participating in the focus group at any time I wish. During the focus group, or at its end, I can ask to modify or remove some of my remarks.
- My name will not be published or communicated to anyone outside of the research team.
- The information I will provide will only be used for this study and for the exploitation of its results.
- Each participant should respect the personal data of the other team members. I fully understand that any information provided by me, or the other members of the group should be kept confidential.
- My participation is voluntary, and I am free to withdraw at any time, without giving any reason.
- I have received the invitation with the information, I have read it and I clearly understand the process that I will follow.

Place and date: _____

Participant's signature
Researcher's signature