

INNOVATION STATION

Research:
Study methods for online and blended
learning and teaching
Project Number 101049694



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Introduction

Many professionals and their activities moved into the online sphere during the unprecedented Covid-19 pandemic in the years 2020 and 2021. Being among the most affected sectors, education at all levels encountered many complex challenges. The experience of lockdown and social distancing measures mandated a transition from face-to-face teaching to distance education, also called emergency online school education (EOE), and the massive infusion of digital strategies to bridge the physical divide.

Literature review from 1986 to 2021 (Giasiranis & Sofos, 2021) on school online education identifies a very small percentage of articles referring to the implementation of online school education in European countries. Still, the review proves a wide application of online school education in some educational systems, such as the USA, Canada, Australia, and China, where the aim is to connect all the country's schools to a "virtual" learning platform by 2025. In Europe, educators, researchers, stakeholders as well as parents and the wider society witnessed a great acceleration in digital education via the emergency online school education. Now, in times where the sanitary crisis looks under control, a good number of sources is available to explore, reflect on and assist policy makers in reforming education by exploiting the experience of 2020-2021.

Innovation Station: A new approach towards online and blended education (InnStation) is a two-year (2022-2024) Erasmus+ project with the vision to contribute to studying the knowledge production in the European Union countries about the insertion of online learning in regular schools and to support sustainability and development of good practices. The Innovation Station project objectives are to create an advanced system for both teachers and students to adapt to the digital challenges of online education. More specifically, the project aims to study and find for students ways of self-directed learning aimed at increasing their participation in the online classroom, to develop a MOOC for students in distance learning, to conduct policy guidelines and to advance the skills of teachers for more effective and creative online learning, as well as to improve the quality of their teaching.



The DAISSy Research Group of the Hellenic Open University (HOU), the partner representing Greece in the project consortium, conducted a research based on data from different European countries. The research focuses on the value of online learning and how it is applied in modern schools. The aim of the study is to offer an overview of the existing practices, tools, and methods for online (and blended) teaching in European Union countries based on the experience of the schools' closure period. Accordingly, good practices of enabling environments for teachers are explored as well as whether a change in teachers' role is presumed in the new context. Lastly, the study endeavors to bring conclusions on the elements that encourage innovation in the formal education system of our era.

1. Part 1

1.1. Terminology and definitions

Before displaying the research, it is worth to define some notions and terms which are basic in this study, like distance learning, e-learning and online school education to better understand if steps forward have been done and the possible necessity to incorporate them in formal education reforms.

UNESCO (2020), defines distance learning as "a term often used synonymously with online learning, e-learning, distance education, correspondence education, external studies, flexible learning, and massive open online courses (MOOCs)". In all these forms, the common features are the "teacher-learner separation by space or time, or both, and the use of media and technology to enable communication and exchange during the learning process". Media and technology can include from printed paper via correspondence to sophisticated digital environments. The effectiveness of distance learning strategies is conditioned by the levels of technological preparedness and infrastructure, content readiness, pedagogical and home-based learning support, readiness and monitoring and evaluation readiness. The evolution of distance learning was electronic learning (Keegan, 2002).



According to Tamm (2020), e-learning is the acquisition of knowledge which takes place through digital technologies and media. In simple language, e-learning is defined as "learning that is enabled electronically". E-learning is conducted on the Internet, where students can access their learning materials online at any place and time, using information and communication technologies for enabling access to online teaching and learning resources.

The exploitation of e-learning into formal and non-formal types of learning led to the hybrid blended learning as an innovation in relation to the traditional classroom (Tayebinik & Puteh, 2013). Blended Learning as a process combines effective traditional activities of learning along with methods, strategies, and tools of distance education. The two environments, physical and electronic, operate for the benefit of learners combining new approaches and activities.

The term emergency online/distance/remote learning was applied during the first period of the COVID-19 pandemic. As experts assert, emergency online learning does not correspond to organized e-learning as it is defined in the international literature. The urgent use of distance communication and teaching forms was a project with many difficulties for teachers, students, and parents (Giasiranis & Sofos, 2020, Tzimopoulos et al., 2021).

Types of distance learning are divided into two main categories depending on time of implementation and type of communication (Tzimopoulos et al. (2020):

(1) Synchronous: When instructor and trainees interact in a different space but at the same time. Synchronous education includes videoconference, webinars, discussions (group, chats), etc.

(2) Asynchronous: When instructor and trainees interact in different spaces and times. Asynchronous education includes communication and availability of study material through e-learning platforms, recorded messages, etc.

According to Aravantinou & Kostas (2022), on 4 March 2020, the term 'Emergency Remote Teaching' (ERT), began to be used internationally, in an attempt by the scientific

community to describe a new reality whereby educational establishments of all types and levels were forced to cease their face-to-face activities and adopt online education methods. In this context, ERT was characterized as the temporary transition of face-to-face teaching to distance education due to extraordinary circumstances such as health crises. ERT is a project that provides a sudden solution to education in times of crisis, while focusing on issues of accessibility, equity, digital divides, privacy and security.

1.2. Methodology

The present study is consisted of 2 parts:

Part 1 is an overview of existing practices, tools, and methods for working online (and blended), as well as of good practices of enabling environments for teachers and things that encourage innovation in the formal education system.

Part 2 explores the current practices of students for online learning and identifies skills and attitudes that encourage self-directed and self-paced learning.

To study what has been done already in the area of our interest (part 1), a literature review is the foundation of our paths. The methodology employed is desk research, defined as a type of research where information is collected from existing sources. It is performed to get initial ideas about a specific topic and understand it better, to learn from previous successes and mistakes and to prepare for further research or develop a prototype. Desk research is another name for secondary research. While primary research involves the generation of data based on specific methods, secondary research involves drawing data from published academic papers, online databases, government documents etc. According to Snyder's (2019) distinction between types of literature review (Systematic, Semi-systematic and Integrative literature review) we adopted a systematic literature review, a method of identifying all empirical evidence that fits pre-specified criteria to answer a particular question, or more.

The criteria specified in the research are:

- Time period (The last 3 years)



- Language (English and other European official languages)
- Setting (secondary education, esp. formal education)¹
- People concerned (teachers, students, stakeholders (parents, governments, etc.))
- Sources: material that is peer-reviewed or from a relevant authority (e.g. Ministry of Education) or a community of practice (e.g. a national teachers association); scientific research reports², educational project reports, teacher interviews, discussions in online fora, educational institute reports, national conferences etc.
- Format (qualitative information mostly, e.g. short description of a best practice; quantitative information only supplementary, e.g. how frequent/how useful the best practice has been)

Regarding part 1, based on the aims of the desk research and the literature review, the questions which motivate the research are:

- Which different methods have been adopted in emergency online education?
- Which different practices and tools have been implemented in emergency online education?
- What kind of experience did students and teachers have during online education?
- Is there a new role of teachers and learners presumed after the online education experience?

For part 2, semi structured interviews for samples of formal education students, teachers as well as stakeholders from different European countries were structured as tools for qualitative research, partly based on the results of 1st part of the desk research. Additionally, the methodology of the Exchange Seminar was used for the research, a moment in which educators and students were brought together onsite to discuss their needs in terms of online learning and digital education.

Finally, the study synthesizes data from part 1, part 2 and endeavors conclusions.

¹ By consulting <https://eurydice.eacea.ec.europa.eu/national-education-systems>, we can make sure we are aware of all forms of secondary education in our countries.

² Examples of relevant databases: Google Scholar, Research Gate, Academia.edu.

1.3. Results of the Desk Research

Results of part 1 of the desk research are classified according to the research questions and cover several educational systems at European level.

1.3.1. Teaching methods and models adopted in emergency online education

Long before the pandemic, there was a discourse about a varying digitalization and platformisation in many education systems promoted by the advancement of technology and the demands of the labour market (Taglietti et al. 2021). During schools' closure, education moved online, and European countries employed the blended methodology of delivering lessons (Amorgianioti, 2020, Mascheroni et al 2020, Montanri, 2020, Nunes, 2021, Pappas & Papadimitriou 2022, Tzimopoulos et al. 2021). Blended learning is a model that combines the advantages of face-to-face learning models with e-learning models by developing various learning media (Faraniza, 2022). Educational activities take place on digital platforms, partly synchronous (online videoconference) and asynchronous (repositories and interaction in digital spaces). Blended learning is appreciated by the European Commission as a focus on converting personal or professional experiences into skills and competences that are relevant for an individual at each life stage (SWD, 2013).

Group work and interaction in class was a *sine qua non* to maintain students' engagement with online learning. A requirement of massive, blended learning, the capacity of technical infrastructures was often not sufficient due to the states unpreparedness for schools' closure. In the paradigm of Greece, to overcome slow internet connection problems in rush hours, when classes all over the country were online, teachers often appeared themselves during the synchronous videoconference sessions but did not allow students to turn their cameras on (Malisiova, 2022). This kind of class management limited students' interaction and active participation, and thus endangered their engagement, therefore teachers were forced to adopt interactive methods and supporting material to raise student engagement. Montanri et al. (2020)

observed in Italian remote schools the use of the division of classes into smaller, self-managed working groups and the exploitation of the platforms' support tools. Work in groups and pairs is also observed in Poland (Buchner and Wierzbicka, 2020), Greece (Manesis et al, 2022), Italy (Filosa & Parente, 2021). The method of frontal teaching has been replaced by a more integrated and participatory teaching method.

Technical issues, as well as the underaged learners' lower digital competences, brought the assistance of educational television sessions for primary education (Amorgianioti, 2020) and a loss of teacher - student communication.

Blended learning was by far the most popular mitigation plan applied during the first year of the COVID-19 pandemic according to results of the project "Europe@Home: European Civic Education through the mobile" (Nunes, 2021). The project aimed to discover in 10 European countries the best practices in digital education of recent years and their successful deployment. The gathered data reveals that the mixed protocol (blended learning) is a growing strategy within youth organisations: a part of learning is fully digital, asynchronous, providing more autonomy and control to the learners as they may navigate through the content on their own pace, and a part is synchronous, where the teacher/facilitator and learners meet in a virtual meeting room at the same time (blended learning).

The implementation of blended learning drew the attention into the difference between the value of autonomous and complementary learning in online/distance education. An autonomous form of education is developed independently of conventional schooling, while complementary education works in parallel with conventional schooling. As Kelessides and Manafi (2021) underline, teachers needed to suddenly, without experience or training, apply the autonomous form of distance education, a form which incorporates the features of diversity in an organized process designed by the teacher and delivered remotely with the use of ICT.

Material design and lesson planning arose as core elements of online education. Lesson planning and teaching based on didactic scenarios are methods of managing teaching and learning that are not new to educators, though in online education the elements to

be merged were unprecedented. It was a demanding undertaking which needed to meet conditions such as: appropriate teaching material to be shaped and adapted according to the needs of the learners for flexibility and inclusive reasons, a variety of means for transmitting information in order to make the content more comprehensible via a multiplicity of sources, virtual examples, simulations especially in asynchronous learning, where the teacher is not present, a care for attractiveness to engage students' interest and direct their attention (Klada, 2022).

Educators faced the need to design digital learning activities, including an initial stage of the process, where the goals and the digital approach are defined, as well as the tools, the learning methodology correlated to the profile of the group of learners and their engagement. Furthermore, the follow up of the digital learning activity occurs after the implementation, with a focus on the evaluation of the previous stages of the process (Nunes, 2021). The importance of instructional design³ is recorded in the educational practice at European level. Also, the adoption of multiple modes (multimodality) and different cultural products (multiliteracy) are found by Traetta et al. (2022) as elements of planning online educational interventions in Italy. Transposition into virtual learning environments highlighted the teaching scenario as being the contemporary narrative, as a pedagogical category which now becomes transmedia thanks to a pervasive diffusion of digital technologies.

To this direction, the flipped classroom (FC) model attained quite a few supporters during emergency online education. The model promotes the idea for students to be prepared at an initial level on the next module or topic before meeting the teacher in the online class: video material, possibly subtitled, is uploaded to the virtual classroom to be viewed before the lesson itself (Pappas & Papadimitriou, 2022). An important factor of the FC approach is to guide students in managing their time and to promote self-regulation. Erkkö Sointu et al. (2022) highlight the added value of employing the FC in Finnish higher education after having investigated students' considered guidance and high satisfaction. Accordingly, in Greece, the FC approach was liaised with concrete

³ Instructional design is a term in didactics. Design models derived from instructional design theories convey guiding principles for analysing, producing, and revising intentional learning contexts (Branch, R.M & Stefaniak, J.E. 2019)



techniques of developing ICT skills and enriching teachers' practices, the promotion of active participation and engagement of students either in secondary or in higher education (Karatsiori et al., 2021, Karalis & Raikou, 2021). Notably, the flipped classroom approach gained the endorsement of the special education sector in Italy too (Filosa & Parente, 2021), and in Poland, a teacher's illustrative quote when interviewed on the topic was "we teach students that we are not the main source of information" (Buchner and Wierzbicka, 2020)

1.3.2. Practices and tools implemented in emergency online education

At European level, video conference platforms from different providers were used to substitute the physical classroom, enabling teachers and students to meet and to have lessons. Either complementary or on the same platform, digital spaces were employed for the provision and sharing of educational material for students to study. In these environments, the use and production of highly iconic teaching materials, like videos, images, cartoons, and drawings was pan European (Filosa & Parente, 2021).

Research conducted in the frame of the Erasmus+ program of the European Union in 10 EU countries (Nunes, 2021) suggests a list of the most popular online learning tools among teachers and students in secondary and non-formal education during online school education. The list consists of online articles, posted on a blog or on a website (e.g. WordPress) and e-books. Also, videos posted on platforms such as YouTube and Instagram, often available with transcripts as comprehensive as any article, and podcasts, which is a particularly flexible tool, since it can be consumed online or downloaded for offline use. The list continues with Massive Open Online Courses (MOOCs) mainly in adult education, in which the learners have the flexibility to interact with the content at their own pace, and open courseware (OCW) which includes a syllabus, online training sessions like video, audio, presentations, exercises, exams or assessment of the learning outcomes. (e.g. Coursera).

According to Traetta (2021), some of the most common tools for synchronous and asynchronous online education in Italy were video conferences via Zoom, Google Meet or Skype, as well as online messaging applications (e.g. WhatsApp, Messenger, Telegram, Signal) and social media (e.g. Facebook, Instagram) were favored along with email and more sophisticated virtual learning environments, like Moodle, Microsoft Teams, Google Classroom, and Padlet (Di Sia, 2021). In Italy, another admired tool is the Up2U platform, which offers teachers the opportunity to test and keep track of the learning process with students. (Montanari, 2020).

Platforms for synchronous and asynchronous learning were in everyday online school life in Greece. In this country, the Webex platform for videoconference and eClass/e-Me for material and asynchronous communication were the tools employed by most teachers, as they were the recommended ones by the educational policy. These platforms incorporated several tools for presentation, evaluation, interaction, and external material (links, videos, online quizzes) could be embedded. Communication with parents for practical and supportive reasons via telephone, email, video calls and conferencing or social media (mainly Viber or Messenger) is also reported in Greece. Finally, Photodentro, which is an educational digital repository funded by the Greek Ministry of Education, had a great acceptance (Papas, 2021).

As Buchner and Wierzbicka (2021) observed, in Poland the most common activities to engage students included sending links, communication using e-classroom tools, live online lessons and recorded lessons. In addition, teachers worked in and assessed their group work on Onedrive. Kahoot, Quizziz, Learning Apps, Padlet, and tools with which teachers and students were familiar from physical classroom.

Research in ICTs and pedagogy (European Agency, 2022) has documented that technology applications have certain advantages for people with special needs or learning difficulties. However, the concept of universal design is not found to any significant extent among technology developers or among the users who apply these technologies in an educational context, even though it is a prerequisite for an inclusive digital learning environment.



Platforms were not only a space for teaching but also for communication. Ensuring communication, mainly between teachers and students as well as between teachers and parents, especially in elementary education, was an important factor for students to keep their engagement in learning. A big challenge was to restore the relations between teachers and students, because teamwork plays a key role in their bonding (Niemi & Kousa, 2020). Keeping bonds and guaranteeing the students' right to study with the use of practices to maintain a lively climate in class were great concerns for many educators.

The transmission of content with the help of technology is much more efficient if the teaching staff creates collaborative, reflective activities and draws clear criteria regarding evaluations (Butharu et al., 2021). Online learning was enriched with interactive exercises or quizzes, art assignments, animated stories, and musical activities (Aravantinou & Kostas, 2022). Structured routines were inserted to make students feel comfortable.

Games became popular as a resource and educational tool to keep the attention of children high (Filosa & Parente, 2021). The experiential feature of games is confirmed as one of the most advanced innovative teaching methods. Playability, interactivity in the approach to the game, the clarity of the objectives to be pursued and the usability of the multimedia artifact focus the attention of learners to such an extent that typical effects of online education, such as loss of temporal cognition, are sometimes overcome. Resulting in increased attentional skills and a sense of control over the educational-media experience. Positive results are found in reference to learning, and more specifically, an increase is observed in the aptitude to explore and to acquire new knowledge (Traetta et al. 2022).

Other practices are related to teachers' behaviors in the online class. In Romania Butnaru et al. (2021) observed the restrictions created by transition to online teaching courses. They highlighted the importance of emphasis in teachers' voice and reduction of the amount of speech presented to high school students on key knowledge, using a smaller number of words. High school teachers in Poland were in search of good practices for support in various fields, not only the academic, like taking care of the soul, body, and

mind. An indicative one is the initiative of a support group for students on Facebook, named "It's COVIDe every day" by young people (Buchner & Wierzbicka, 2020).

A good practice which is reported regarding teachers learning was developed spontaneously during online schooling. Teachers were stressed either with the new notion of emergency online education, with all the digital tools suggested by the educational policy and their different role, or because of the need to transform all their educational material into forms suitable for synchronous and asynchronous online teaching. They also needed advanced skills to support students' wellbeing in the pandemic. In Greece, Xesternou (2021) reports that this context led teachers to seek learning from each other through joining in collectives via blogs or social media groups.

The old known mutual teaching method worked with online discussions between teachers from across the country, with the exchange of experience and know-how, with the emergence of "sages", qualified colleagues and mentors in ICT, among the peers of the community. The data collection techniques that were applied in the context of mutual learning action follow the crowdsourcing model, focused on information provision for teaching with digital media. Specifically, the most requested topics were the role of the teacher in online class, learning objectives, digital resources, teaching scenario, contact with students, contact with teachers, evaluation of teaching intervention, and technical support.

1.3.3. Students' and teachers' experience during online education

The academic community and educators themselves showed a great interest in recording teachers and students' perceptions and experiences from online school education during the sanitary crisis in 2020-2021.

A great challenge was to keep students' engagement in school and in the the learning process. Klada (2022) studied data from 100 high school and university students in Greece. Although the sample is not big, it can offer a picture of young people perceptions. 68% of high school students felt a lack of communication in the learning process, while 56% of university students had difficulty in concentrating, which for

younger students was much lower, 17%. Also, 25% of both students' categories mentioned difficulties in understanding the course as an element of dissatisfaction.

The predominant feeling of teachers when suddenly and without any preparation had to teach their students remotely was, mainly, negative (53%). Although they were possessed by stress, anxiety, and doubts about whether they will succeed, a 97% of Greek teachers responded and participated in online education. In this country, regarding the type of educational material they assigned to their students, a sample of 414 teachers in formal education gave more assignments (15%) and texts for study (13%), to a lesser extent non-textual types such as videos (12%), images (11%), presentations (9%), audio excerpts (5%) and to an even lesser extent who assigned educational material that triggers active participation of students (mini-experiments: 3%, simulations: 3%, research projects: 2%) (Giasirani & Sofos, 2021). In Finland, distance teaching was implemented very successfully, but the main challenges for teachers included non-authentic interaction and a lack of the spontaneity that in-person teaching provides.

Teachers quickly learned to use technological platforms, but interaction through them was not reported as of high quality (Niem & Kousa, 2020). Niem & Kousa(2020). Literature review found that the pandemic affected students in different ways. Some students suffered under distance learning and even dropped out, and there were also students who became more self-directed and benefited from distance learning.

A study in 10 European countries assumes that in online education the learner had an active role in the creation of the learning process and can be even involved in decision-making processes related to the learning content and tasks. This approach of autonomy and active participation allows the learner to acquire knowledge and skills due to their exposure to participatory methods in learning, instead of passive approaches to knowledge transfer (Nunes, 2021).

Several studies report transformation in the teachers' role. Based on teachers' responses, their role as counsellor is highlighted, because they often were called upon to offer personalized advice on issues concerning students (Manesis et Aa., 2022). In Italy, the teaching staff has reconsidered their teaching strategies, with a change of



perspective compared to the past (Filosa & Parente, 2021). Overall, a decent percentage of satisfaction emerges in this country, although it should be noted that more than a third of teachers are a little or not satisfied. Student assessment and interaction with students were the major difficulties for Italian teachers (Truzoli et al. 2021).

Another aspect mentioned by Mascheroni et al. (2021) is that online school is the reason adults' concerns about spending time online started changing. The time children spent online doing non-schooling activities may have been their only opportunity to connect with friends, relax or even to exercise. In the same study, recent global evidence indicates that it is critical for educational institutions to engage with learners and families for remote learning to be effective. In this respect, it is promising that most students (75%) in our sample said their school provided digital-messaging apps to facilitate communication between schools and families.

1.4. Conclusions of the Desk Research

In part 1, findings of the desk research highlighted specific methodological approaches and techniques for teaching (e.g., less lecture – more interaction). Also, student participation (e.g., giving clear directions on activities, game-based rewards) came out as a need in order to achieve an effective online education and to keep students' interest and focus.

The maintenance of students' engagement brought to the fore the issue of their active participation in the process of teaching-learning. Additionally, many opportunities were given to reflect on the topic of students' scaffolding in autonomous learning. Instructional design appears as sine qua non in contemporary education, regardless of whether it is online or not.

After the emergency online education, collaboration between all people involved in education proved valuable with tangible results. The added value of teachers' communities of practice brought to another level their professional identity, showing bottom-up initiatives. Educators advanced their digital literacy, and the important aspect



of the pedagogical value of digital tools became more clear: digital tools are not a peril or a panacea, but they might very well support the work of teaching.

Experts report that there is much to be studied regarding the experience of emergency online education. Although there is official data, the literature review shows scattered results. Studies with open-ended questions focused on teachers' views about the difficulties or risks of distance education or their opinions on distance education benefits, along with a comparison to the benefits of face-to-face education, while students' opinions should be also asked on this topic.

2. Part 2

The purpose of the study is to contribute to exploring and developing students' capacity for self-directed learning with the aim to empower future citizens' participation in online lifelong learning.

Part 1 attempted an overview of existing practices, tools, and methods for online (and blended) school education based on the recent literature focused on the experience of emergency online education (EOE). The methodology of desk research was implemented in part 1.

Part 2 of the study processes original data acquired from the school community, including teachers and students, with the aim to explore how they experienced several aspects of the EOE during the pandemic. Specific focus is paid on best practices and tools which the sample of participants identified as supportive for students' self-directed learning.

2.1. Methodology

The main research question of the study is: *what are the lessons learned in the educational community regarding online education after the experience of EOE during the COVID-19 crisis in Europe?* Accordingly, the aim is to explore and analyse the experience of teachers and students from secondary and higher education, in terms of the EOE.



Particular attention is paid to a) teaching and learning patterns and practices, b) the perceptions of changes produced by EOE and c) whether elements of EOE should be sustained in a blended learning school model, to improve students' capacity of self-directed learning.

The method of qualitative descriptive study was selected as the applicable research method, due to its openness and flexibility that can elicit answers from the school community itself as deeper insights into real-world problems. Qualitative research gathers participants' experiences, perceptions, and behaviors (Delamont. & Jones, 2012, Tenny et al 2022), which is the aim of our study. In addition, the desk research showed that the extended interest to investigate the experience of the emergency online education focus has been mainly teachers and not students, therefore our study hopes to contribute in filling the gap by interviewing a sample the students.

The data collection was carried out with interviews as the research tool. An interview, according to Delamont. & Jones (2012), besides gathering data for further processing, creates a connection and engagement between the participant and the researcher, offering to the researcher a better understanding of the experience of the interviewed.

A set of 3 prototype interviews was conducted: for students, for teachers, and for practitioners. Mainly open-ended questions and 1 closed ended one were composed to explore specific topics related to the data collected in the desk research (Part 1 of this report).

A list of topics was the guide for composing the interviews. The topics were selected from: a. the desk research data via a recent literature review; b. pilot interviews with three (3) teachers and three (3) students and c. the notes taken during a 2-day exchange seminar, where teachers and students from European countries participated with the aim to express their experience on the emergency online education as well as to offer feedback upon the sustainability of EOE and particularly the blended model.

The aim of the qualitative study was to achieve a minimum of 50 interviews from different countries across Europe, therefore electronic research methods – such as



email interviews — were selected. It is a type of collecting data which has moved from marginal complementary activities to potentially becoming primary methods (Dahlin, 2021). Email interview emerged in the beginning of the 21st century (Meho, 2006) and until now the work on methodologies associated with email interviewing is growing (Lobe et al., 2020). Today email interviewing is recognized as a reliable method of data collection despite some associated difficulties that have been identified.

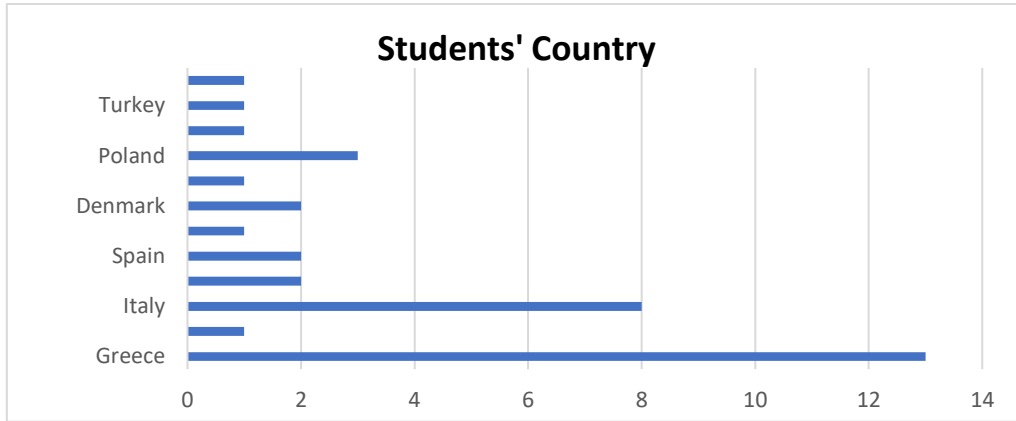
To fulfill the aim of the study, the method of thematic analysis of data is implemented. Six main steps of thematic analysis have been in practice: 1. Read the transcripts, 2. Annotation of the transcripts, 3. Conceptualization of data, i.e., creating categories and subcategories by grouping the codes created during annotation, 4. Segmentation of data, the process of positioning and connecting categories, 5. Analyzing the segments, 6. Writing the results.

2.1.1. The sample

The study involved 82 participants: 37 students, 32 teachers and 13 practitioners. The term *practitioners* is used for strong professional profile teachers who hold a supervision role in a network of teachers (headmasters, school counsellors, teachers' trainers). Participants were recruited via snowball sampling in countries of the European Union, by research units from five organisations, partners in the consortium of the Erasmus+ project "Innovation Station: A new approach towards online and blended education."

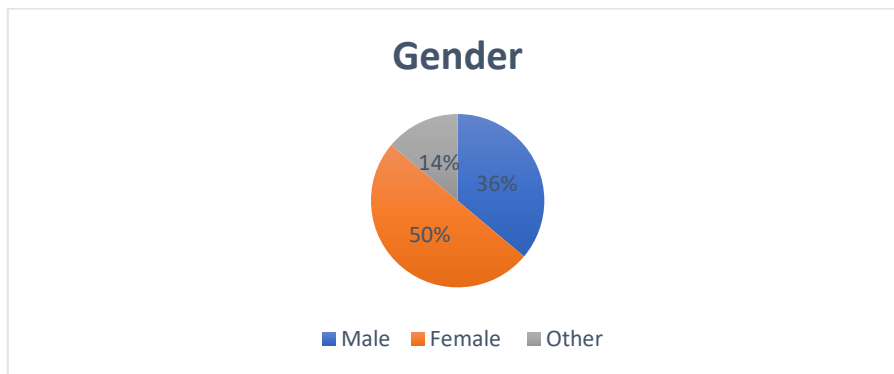
Demographic data of participants in the survey are presented below, mainly visualized.

Regarding students, the average age is 19 years and they come from different European countries. The majority of the interviewed students come from southern (Greece, Italy) and central (Poland) European countries.



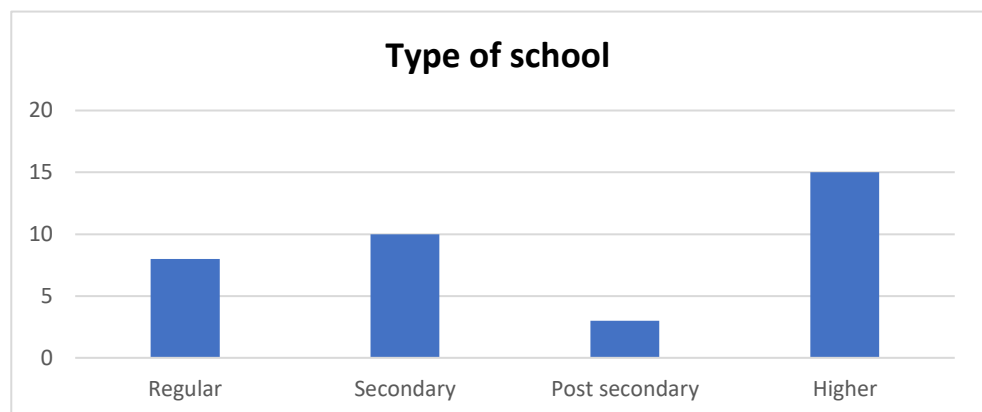
Picture 1: Students' Origin Country

Most of the students are female.



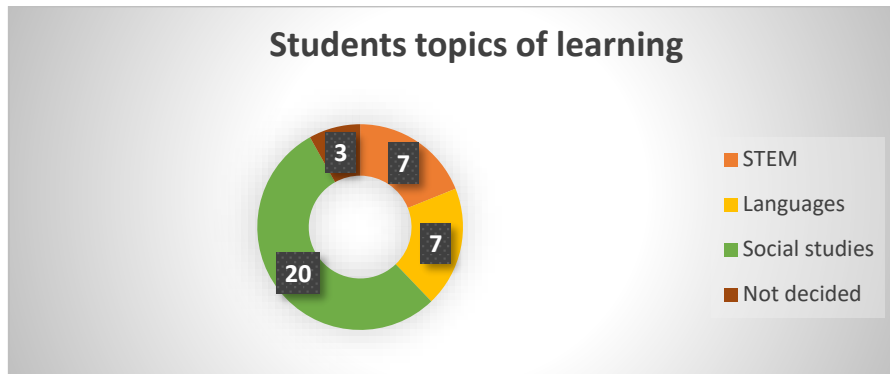
Picture 2: Students' Gender

As shown in picture 3, the participants were students from secondary and higher education, as was the purpose of the study.



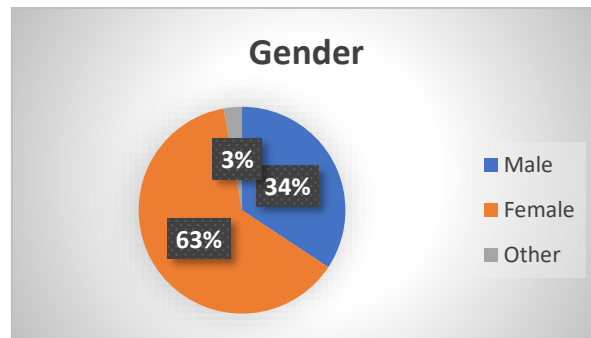
Picture 3: Students' type of school

The favorite topic of learning is Social studies (history, sociology, psychology): 20/37, STEM: 7/37, Languages: 7/37, Not decided: 3/37



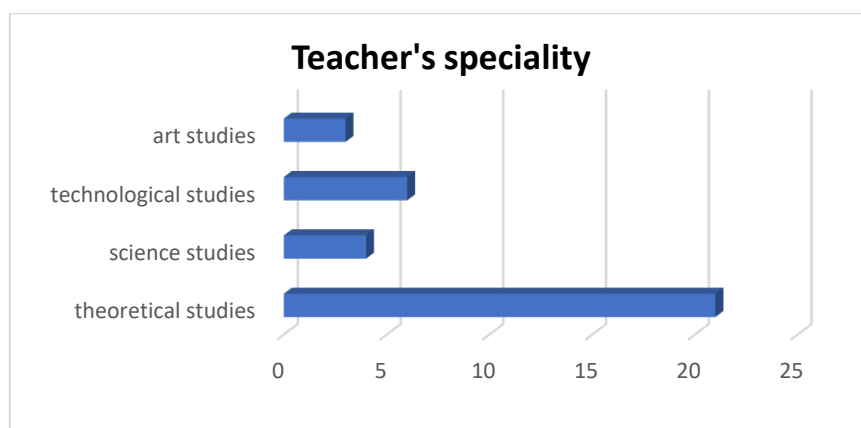
Picture 4.

Regarding teachers, the majority (63%) are female, 34% male and 3% other.



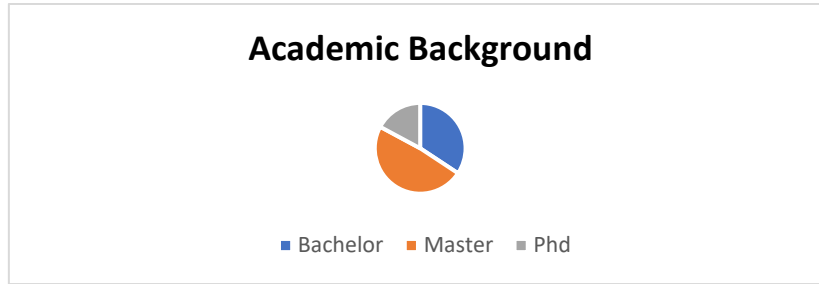
Picture 5.

Most of the teachers' specialties are humanities and social studies.



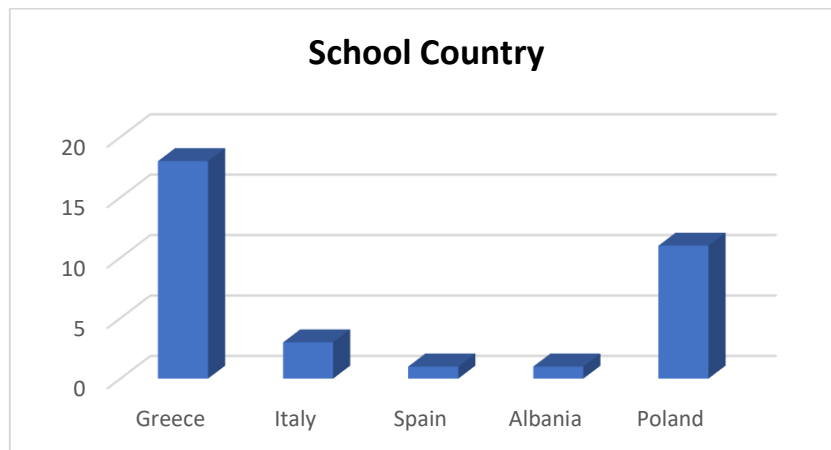
Picture 6.

Most of the participants hold a master's degree, some of them hold a Ph.D.



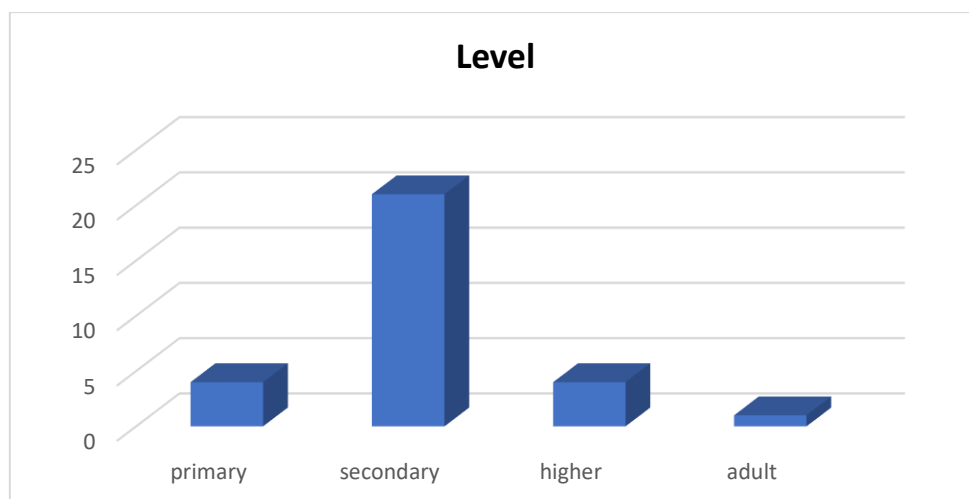
Picture 7.

Most teachers work in Greece and Poland.

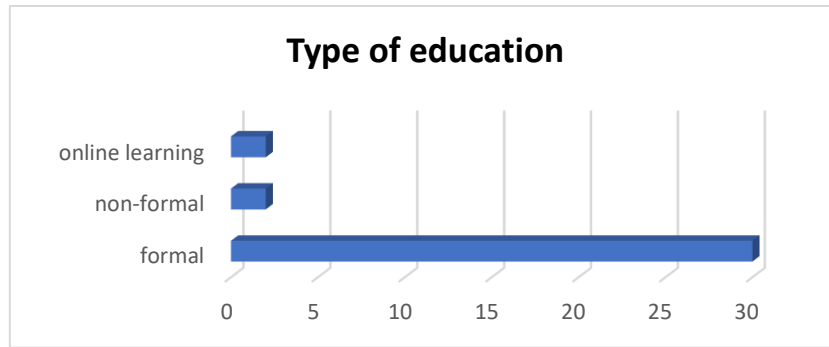


Picture 8.

Most of the participants teach secondary formal education.

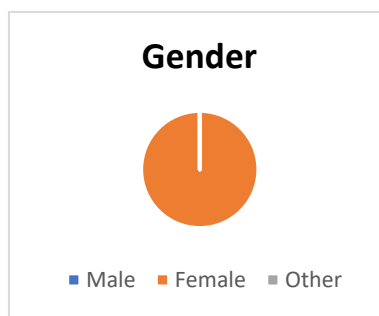


Picture 9.



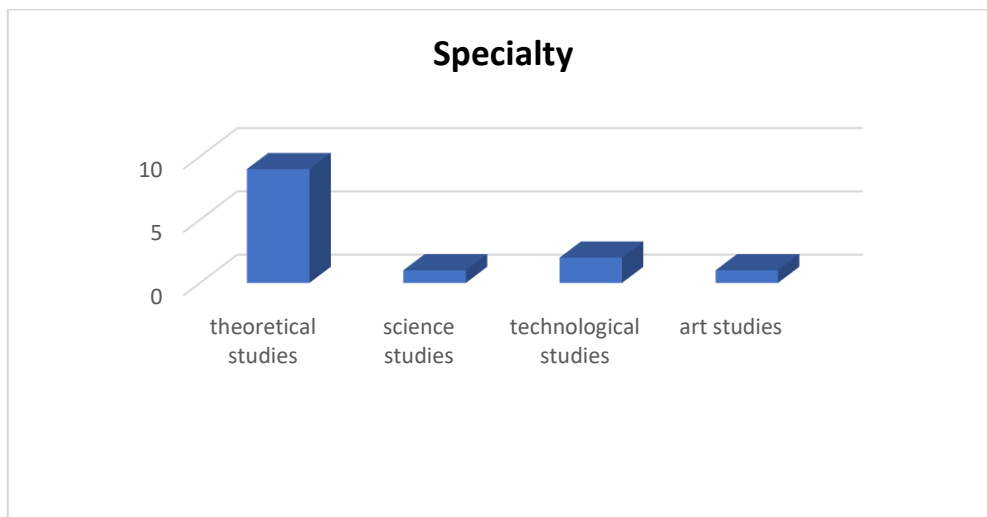
Picture 10.

The practitioners that were interviewed are female.



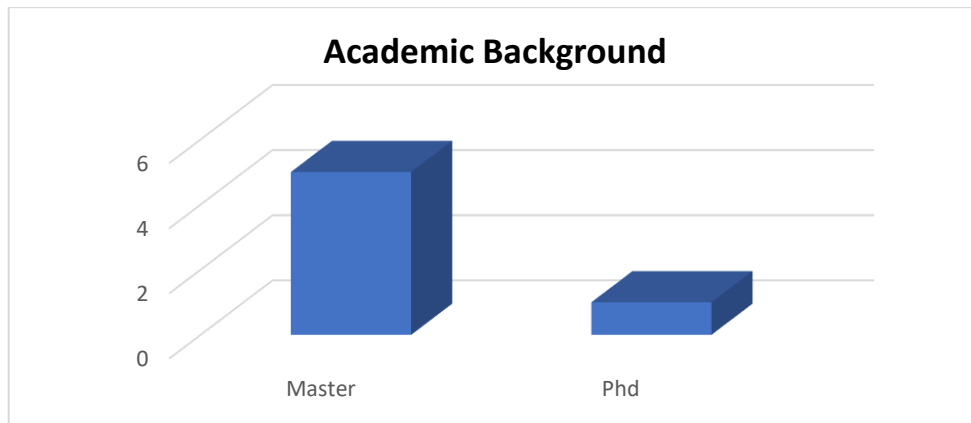
Picture 11.

Most of the practitioners have a specialty in humanities and social studies.



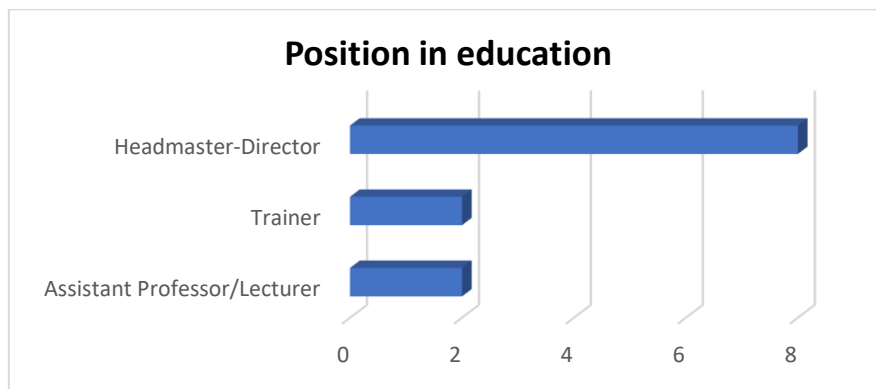
Picture 12.

The majority hold a master's degree.



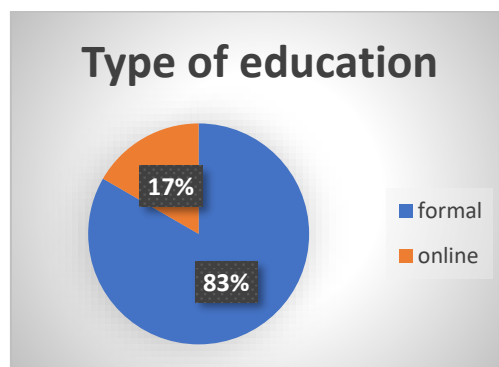
Picture 13.

Practitioners work in several positions, most of them are headmasters - school directors, while others are trainers and lecturers.



Picture 14.

Most of them are working in formal education, while others work both in formal and online education.



Picture 15.

Practitioners' average age is 48 years old and years of service in education average is 23.

2. 2. Results

2.2.1. Students

By processing the data collected from 37 students' interviews, the study contemplates three micro-categories: learning preferences and attitudes towards learning (Q2-Q4), difficulties and shortages during the EOE (Q5-Q6), and effective features of EOE (Q7-Q9).

2.2.1.1. Learning preferences and attitudes towards learning

The first macro-category explores students' learning patterns and practices, and their favourite learning habits which are perceived as more effective. The use of patterns is subject to studies of Learning Styles, a term defined as "conscious and intentional strategies that individuals employ to achieve well-defined ends" (Cook, 2005). The exploration of students' learning patterns may have illuminated a possible correlation between how students perceived EOE.

In Q2 "**Regarding the way you learn, what strategies or techniques do you follow to learn?**", for 12 out of 36 students the most preferable way for acquiring knowledge appears to be "take notes", "make bullets", and "write a summary". These replies prove that interviewees feel able to absorb and retain the most information through reading and writing text. In literature, this practice is the choice of the reading/writing learning type (Peyman et. Al. 2014). The second popular answer is "read repeatedly" (9/36 students) which is also a characteristic of the reading/writing learning type. The "read-repeat loudly" preference (9/36 students), and "listen carefully to the teacher/lecturer" follow next, as 5/36 students acquire knowledge this way. According to the typification of learning styles, the practice of repeating loudly as well as listening to a speaker and absorbing is a characteristic of aural or auditory learners (Peyman et. Al. 2014). Lastly, 2 students "try to stay focused" on what they try to learn.

Aiming to investigate whether students are autonomous in managing their homework and have experience of self-regulated learning, after the instructions by their teachers at school, they were asked: **“Is there a person who helps you in studying at home?”** Regarding their study at home, 30 out of 36 (81%) students responded they learn alone, they do homework without help. The rest 6 of the sample get help either from a private teacher or a member/s of their family.

Still focusing on students' learning norms, we look into students' perceptions of what a teacher does/should do to help students learn via the double question no. 5: **“At school, how does a teacher help you to learn? What do you think a teacher should do to help you learn?”**. Answers to this question were classified into the following four groups.

- a. 10 out of 36 students (27%) clearly believe that teachers help students learn when they respond to students' individual needs:

“[teachers] should have the ability to understand how each and every student can learn and adapt in that way. [...] should have a way of simplifying the subject by using examples in order to help students learn [...] he /she should be close to students and create an environmentally friendly class”. [111]

“by frequently making sure we have all understood the topic and ask you to participate [...] I think it's important to deliver different teaching methods to allow all students to learn” [125]

“when teachers emphasize to the student that have the problem the student might feel more comfortable [...] in order to understand much better” [114]

“by making sure that everyone can understand the topic” [119]

“I believe that they would provide us with individual tutorials” [145]

“Teacher has a presentation and check for homeworks but in university there isn't much helpful” [143]

“[teacher should] be engaged in my learning level and cater to that. Changing and explanation to cater to my undestranding makes me feel seen and encased” [1411]

“by facing the students' difficulties and promoting custom made solutions” [122]

“Address different needs of different students” [147]

“they [teachers] want us to try their techniques, so we do not feel like it's actually for us. They should study the new actual ways of studying and go beyond the usual way to do it”. [142]

- b. Close to the previous percentage, 24%, 9 students out of 36, believe that students learn better when the teacher enhances students' active participation, interacting either with the teacher or in collaboration between students in group work activities.

"a teacher helps us students learn by involving us in the teaching process (by asking questions, making us use critical thinking, etc) and not only introducing the material, it helps reduce my stress and enjoy learning. Game quizzes are also a fun way of testing our knowledge, as well as watching movies or videos" [112]

"Teachers assist by answering questions and explaining the topic thoroughly. A teacher should interact with the students [...] to maintain the students' attention and improve comprehension of the subject" [121]

"a teacher can help a student learn by getting him to be active in their class and getting to do and hear things that they can participate with" [113]

"Teachers should make the lesson interactive and involving, in order for the students to be interested in what's being taught and to put in practice what they're learning". [123]

"teachers work with us a lot of tasks so that we not only listen but also practice [...] teachers should try to encourage to learn about a given subject and not just read dry information from the textbook. More emphasis should also be placed on practice [151]

"definitely doing group projects in the classroom" [112]

"allowing students to participate and group work are efficient ways to learn" [125]

"cooperative projects by students is a very interesting technique. Techniques which make students to take part in teaching process is a very useful step as well" [1112]

"more interaction and examples" [1114]

- c. A smaller number of students, (13%) i.e., 5/36, expect teachers to organize knowledge for them by offering examples making the objectives clear and recommending different learning methods and sources.

"make clear and objective plans on what it is important" [141]

"with examples" [115], "through multiple examples" [116]

"they should also give us advice on what other learning methods we can adopt" [153]

"by making notes of the key points of the lecture. Also, it is useful for me to recommend us some sources to explore by ourselves new things" [1113]

- d. With a different perspective 6/37 (16%) of students do not focus on elementary cognitive means or techniques. They stress that teachers help them in learning by constructing learning as a social environment by building relations in class:

"Making it [the class] a safe place for you to learn and a place of competition or monitoring" [149]

"he /she should be close to students and create an environmentally friendly class" [111]

"it is important for teacher to be on the "Student's side"". [1411]

"a teacher should optimize the relationship and communication with students before passing on teaching content to them" [126]

"A teacher must love what she/he does so that the lesson can have an impact on me" [1110]

"should be very supportive and being characterized by patience and willingness to share his knowledge" [1111]

2.2.1.2. Difficulties and shortages during EOE

The second micro-category consists of either the difficulties faced due to the characteristics of EOE itself and/or the abrupt shift from physical class habits to remote schooling at home. The question no.5 was **"during online education, what did you miss from your physical class teaching routines or habits?"**

15/37 (40%) of students expressed that what they missed more was "physical/real time interaction between students and teacher" and "physical contact". Some illustrative examples show how often the phrases "interaction/contact/connection" are used by the interviewees:

"firstly, I missed the physical interaction that I had with my teachers and other classmates during class. Secondly i missed the facial expressions" [111]

"Real-time interaction with classmates and teachers is of utter importance to me. [...] So even if the material is being taught properly, the lack of other important discussions during lessons, such as those about students' mental health and issues that preoccupy them, is rather critical" [112]

"physical connection with the teacher was very important" [115]

"physical interaction with my classmates and the bond we had when we were in our natural classroom, the most" [116]

"the face to face communication" [119]

"I missed the social contact with my classmates" [1413]

"I missed interacting with the teachers in a more direct way, as well as with my friends" [121]

"I missed contact with other people in the class as well as everything that happens during breaks" [151]

Other elements of physical class identified by the interviewed students as missed during the swift to online education were:

- Friends-social relations (5/37)

"I also missed the chemistry we had with certain teachers" [116]

"My friends" [117]

"Socializing, going on a break between classes, sitting next to friends" [141]

"lunch with friends and teachers" [147]

"because I am kind of an introvert I didn't miss much" [113]

- Group work (3/37)

"being able to complete group work and talk to other students during the classes" [125]

"especially discussions in work groups" [149]

"I miss team working" [152]

- School setting (3/37)

"just the fact of entering the school structure and being in contact with the environment makes learning easier, whereas at home you have many more distractions" [126]

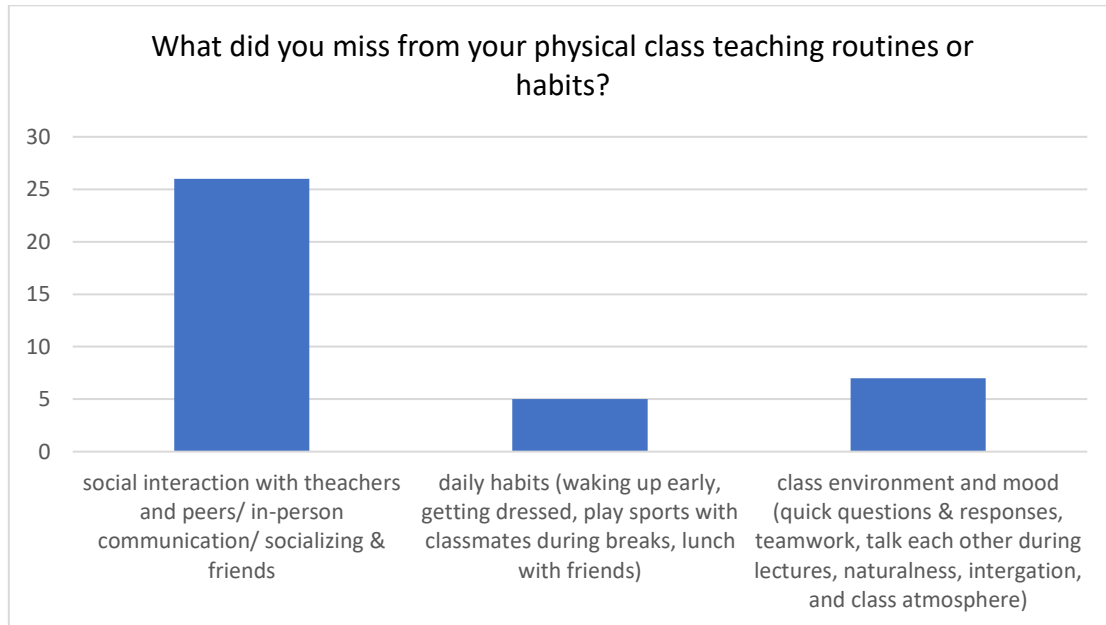
"I missed the integration and atmosphere that prevails at school and allows me to focus more on lessons" [153]

"the fact that I had to leave my house and go to a very special to me space" [1112]

- Deliberation (2/37)

"The actual discussion with teachers and classmates" [142],

"the lack of other important discussions during lessons, such as those about students' mental health and issues that preoccupy them, is rather critical" [112]



Picture 16: What did you miss from your physical class teaching routines or habits

To explore the challenges related to the EOE process, interviewees when asked "**which were the difficulties you faced during the emergency online education?**".

Technical issues, mainly low quality of internet connection, were an obstacle for 10/37 (27%) of students.

Additional difficulties that occupied the students were:

- Lack of concentration

"I was less paying attention to the courses" [144]

"problems to pay attention" [127]

"I have big problem with concentration especially in front of a computer" [152]

"concentration throughout the lessons. It is easier to be distracted when not in a 'work:' environment" [125]

"focusing on a teacher you couldn't see (due to closed cameras) for long periods of time was tiring" [121]

- Deficient communication

"poor direct communication and contact with teacher" [1114]

"the difficulty in communicating with each other" [126]

"not being able to talk to your classmates about the different topics made learning a harder task. I think it is important, when learning, to be able to communicate with others and be in direct contact with the teacher" [125]

"communication between teacher and student was poor and we were all unmotivated to follow the lessons because learning in a video call is more difficult to make the conversation understandable" [1413]

- Social isolation and low interaction

"Another problem I faced during the pandemic was the lack of my friends. I missed them a lot and also the classroom spirit" [1113]

"the absence of interactivity and face to face communication" [1111]

"adapting to the online setting, reduced interactivity within the University" [124]

- Inconvenient study environment at home

"I had focuses difficulties. It is very difficult to study or attend a class with other people in the house" [1113]

"Often also the family could not understand that at a given time I had lessons, and I was forced to fulfill household duties which distracted me from studying" [153]

"students were easily distracted or interrupted by outside factors" [121]

- Teachers' unpreparedness

"the teachers weren't prepared well. It really depended on the teacher, but many of them were just talking and it was boring" [1410]

"It was also hard to sit in class because the long lectures were exhausting and hard to focus on" [153]

- Health (physical – mental) problems caused by extensive use of computers

"Too much time on the screen wasn't too much help" [1110]

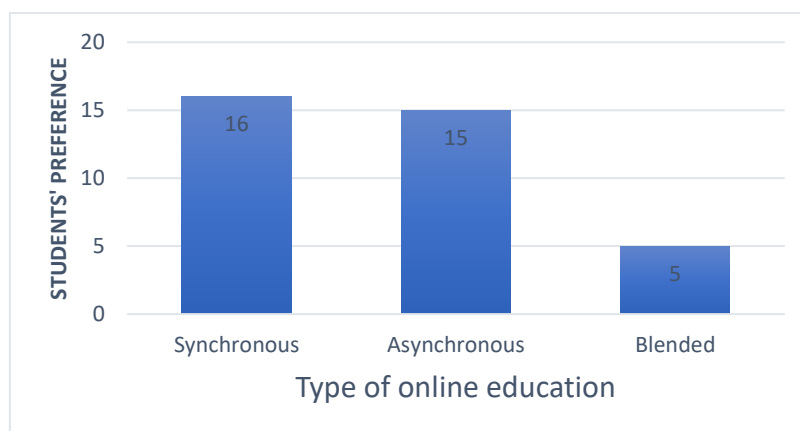
"many hours after class in front of a screen resulted in frequent headaches" [122]

2.2.1.3. Effective features of the EOE

A third micro-category emerges from processing the data. It consists of the features of EOE which the sample of students realises as effective for learning. Participants were asked to specify by indicating tools and methods in terms of synchronous, asynchronous, and blended learning.

This micro-category collects data from three questions Q7, Q8, Q9.

Q7 is: **"In online education, did you feel more satisfied with synchronous learning (for example video meetings with teacher and other students) or asynchronous learning (for example using learning material from a platform)?"**. According to the answers, 16/37 students prefer synchronous learning, 15/37 asynchronous learning and 5/37 both, i.e. blended learning.

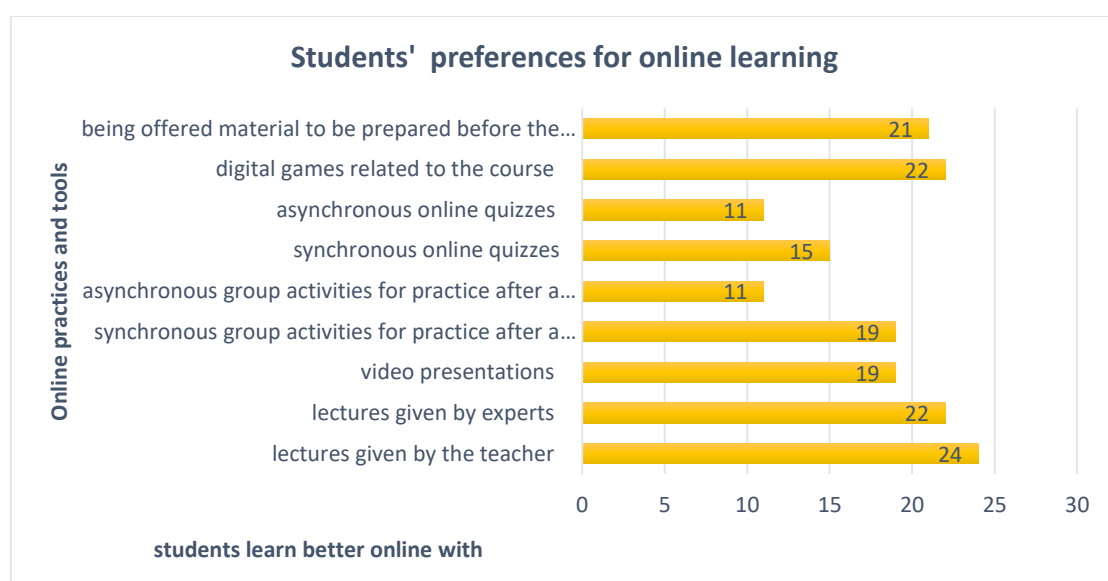


Picture 17.

In Q8, interviewees were asked **"In online education you learn better with (check as many as you wish from the list)"** and were invited to select from a list of practices of online learning as many as they believe helped them to learn better during EOE. The list provides the following elements:

Lectures given by my teacher, lectures given by experts, video presentations, synchronous group activities for practice after a teacher's presentation, asynchronous group activities for practice after a teacher's presentation, synchronous online quizzes, asynchronous online quizzes, digital games related to a course, being offered material to be prepared before the video meeting with the teacher and other students, other (please explain in brief).

The results, as shown in Picture 8 below, highlight "lectures given by the teacher", with 24/37 (65%) of students preferring it as an effective practice for their learning.



Picture. 18. Students' preference of EOE practices and tools

Highly estimated by students are also "lectures given by experts" and "digital games related to the course" with 22/37 answers, and the flipped classroom practice "being offered material to be prepared before the video meeting with the teacher" with 21/37. 19 votes were given for "synchronous group activities for practice after a teacher's presentation" and "video presentations" and 11/37 also prefer "asynchronous online quizzes" and "asynchronous group activities for practice after a teacher's presentation".

In the third micro-category, supplemental to the previous parameters is Q9: **"Did you find useful elements in online education during the pandemic, which you suggest adopting in physical class?"** A favored element for 8/37 students is online platforms which support asynchronous learning and facilitates self-study or independent learning,

like eClass, MS Teams, Moodle, D365, Google workspace, etc. Examples of the reasoning are as follows:

"tools like e-class, MS Teams. Also, it makes me more capable to organise my schedule in a productive way" [1113]

"We started using the Google Classroom which is a way powerful tool." [145]

"Online platforms such as e-classes that were created to help asynchronous education were very helpful" [112]

"the online platforms such as eClass that after the lesson we could find notes or extra exercises for that day's topic. So, I strongly believe that teachers should continue with this practice" [111]

"Asynchronous activities were also a useful element as we could take our time to complete them". [125]

"asynchronous online activities" [126], "Asynchronous activities were also a useful element as we could take our time to complete them. [...]" [125]

"I think that the materials we received from the teachers were very helpful and I hope that we will be able to receive them during normal lessons. It was very helpful for self-study" [153]

"in physical class the asynchronous technique should be kept" [1112]

"I also found it helpful to have recorded short lectures that we could watch at any time to review the material before the lesson or the test" [153]

- Video presentations are also recommended by several students interviewees to sustain in physical class:

"Yes, videos were super helpful during online education" [1410], "video presentations and documentaries was useful and made the lesson easier for students" [113], [115], [116], [121], [124], [1110], [147]

"The use of interactive videos and useful links on the internet for additional learning" [1111],

"in physical class teachers should use technology such online presentations, videos" [1112]

"we learned more by taking quizzes" [116], "quizzes and games that are related to a course. With this method students would learn with excitement" [119],

"online activities and website use/exploration can be useful in the physical classroom" [121], [123], [124], "different apps and websites to make the lesson more diverse" [151]

- Other features of EOE indicated as worth to sustain in on-site education are:

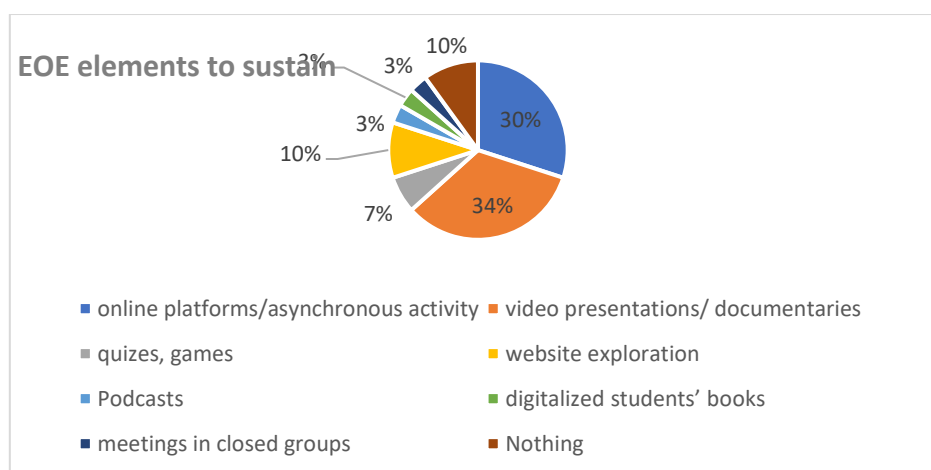
"I liked getting more homework to learn the material because when going physically, we don't do any homework" [141]

"Podcasts" [146]

"digitalized students' books" [148]

"I also think that language meetings in closed groups were helpful. We could talk and practice our pronunciation." [153]

- Nevertheless, a part (8%) of the sample finds that nothing in EOE was useful to sustain: [117], [142], [1114]



Picture 19. Students suggest elements of EOE to sustain in physical class

Participants suggested as the most efficient elements of online education that will be adopted in physical classes the video presentations and websites.

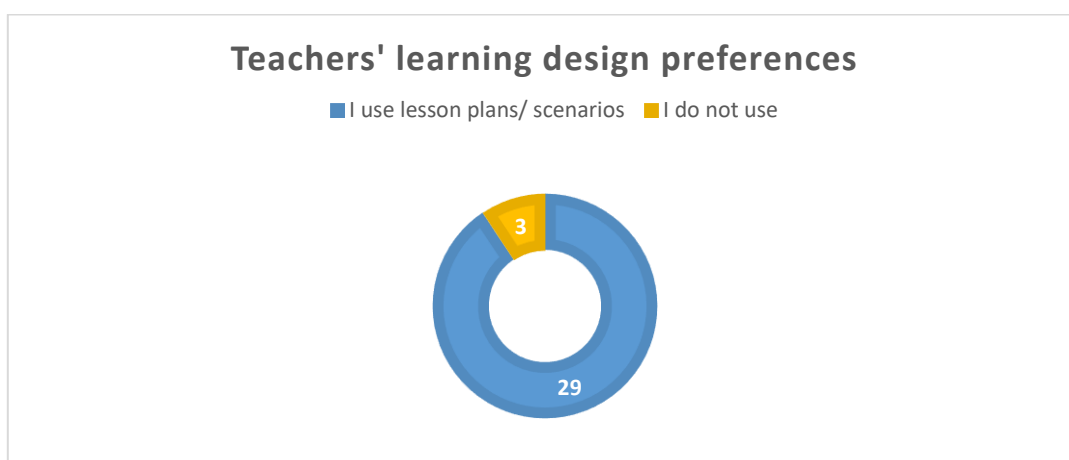
2.2.2. Teachers

By processing the data collected from interviews with 32 teachers and 13 practitioners (teachers with a higher pedagogy profile, who supervise teachers' networks i.e., in administrative, mentor or other supervision positions), the study contemplates three micro-categories: teaching preferences-attitudes (Q1-Q4), challenges during EOE (Q6, Q7, Q11, Q12), and effective features of EOE (Q5, Q8-Q10, Q13).

2.2.2.1. Teaching preferences-attitudes

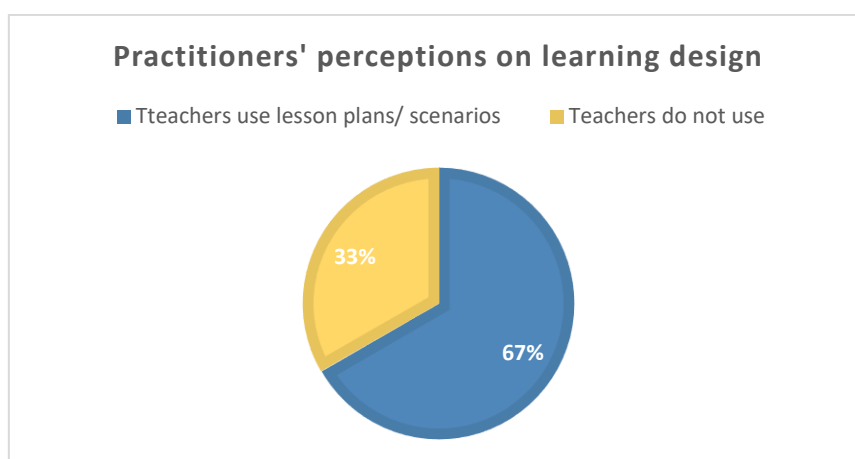
The first micro-category (Q1-Q4) includes teachers' preferences and practitioners' observations about teaching patterns and practices, favourite teaching habits perceived as more effective.

Regarding learning design, answers to Q1 "**Do you regularly use lesson plans or didactic scenarios**" show 29/32 teachers (90%) do use them. The 8/29 who use learning design tools report "often/always" and 4/29 create their own lesson plans or scenarios.



Picture 20.

The same question addressed to practitioners "**Do teachers regularly use lesson plans or didactic scenarios?**" gave 8/12 (66%) positive answer.



Picture 21.

According to teachers' replies at (Q2) **"Do you usually make your own teaching material? If not, please explain the source of the material that you use."**, 30/32 teachers create their own material. They usually adopt material from several resources, physical or online, and make their own synthesis or they adjust existing material to the needs of their class, as demonstrated in the excerpts below:

"I usually make my own material or adjust material from various sources (eg Deutsche Welle, Goethe Institut)" [218]

"I usually create my own teaching materials. However sometimes I use Materials banks to pick and adapt materials to my students' needs and level." [215]

"I either make my own teaching material or use online resources" [214]

"Both my own and the material provided by the ministry of education." [212]

"I always create my own material for History lessons using digital Archives such as Europeana, Arolsen Archives on Forced Labour, and Pilecki Institute Chronicles of Terrors' collections, just to cite three." [233]

"I make my own material combined with activities from ebooks.edu.gr, YouTube, photodentro.edu.gr and tools related to the subject I teach." [2122]

"I create my own exercises and quizzes based on the programming environment I teach." [2121]

"I make my own teaching material based on selected textbooks." [2122]

"I usually use coursebooks and workbooks, I often use" [251]

The same Q2 **"Do teachers usually make their own teaching material? If not, please explain the source of material they use"** was applied to practitioners and received 7/13 positive replies and 2/13 negative. 4 out of 13 practitioners gave more explanatory answers:

"Yes, they create their own materials, but they are inspired by those from publishing houses or the Internet" [356]

"They rarely create, rather they use scripts prepared by publishing houses." [358]

"Some teachers develop their own exercises for students to revise the content." [311]

"Not everyone is creating their own teaching materials. There are some teachers that just rely on the handbooks they have" [321]

Literature provides plenty of data about collaboration between teachers, the term defined as teachers' cooperation aimed at achieving the school objectives. Collaboration is considered a factor which affects teaching instructions, teaching practice and students' achievements (Shakenova, 2017), therefore our study, that explores teachers' teaching practices, set the subject at teachers and practitioners in Q3 **"Do teachers regularly collaborate to exchange teaching material? If yes, please explain the kind of collaboration."**

6 out of 32 (19%) teachers of the sample replied "no" or "not regularly", while 26/32 (81%) collaborate to exchange material. More specifically, 13 teachers mentioned that they focus on exchanging practices and material with colleagues, and 3 teachers focus on students' behaviour. The rest of positive responses include different topics of cooperation:

"Yes, exchange of teaching materials, conversation, exchange of information, motivation, inspiration" [353]

"[we collaborate for] development of ways of collecting and transferring information between teachers, in subject, cross-curricular, in educational and preventive teams, in teams for psychological and pedagogical assistance, for the exchange of proven and developed methods and forms of work with weak and talented students." [2510]

"Yes, we develop the principles of an individual teaching process together, share the results of observations, develop the distribution of material" [255]

"[for] exchange of experiences, joint organization of holidays and celebrations and competitions. Joint discussions on actions taken against specific behaviors of children" [258]

"Yes, I exchange material or have various discussions before the lessons." [2123]

"With some of my colleagues in the department, I share resources and exchange views on the shared materials, and we give each other updates on the students." [222]

It is worth noting that 3/32 teachers collaborate with peers online, mainly via social media groups.



"Yes, with my colleagues we have a messenger group when we share some good ideas and materials worth using" [251]

From practitioner' sample, Q3 received 6/13 positive answers which are "yes" or "teachers regularly collaborate" and 2/13 reported "no". Some practitioners gave a reflective answer.

"Teachers are reluctant to share the products of their work, create and often only use them themselves. Regular cooperation usually takes place in informal meetings, it consists in exchanging experiences, sometimes peer lessons" [352]

"They usually do not collaborate to exchange material but the do to coordinate the curriculum when they teach the same subject" [311]

"It depends on the subject. With colleagues from the same departments, we do exchange tips and advice on the materials we collect, but not the teaching materials" [321]

The first micro-category ends exploring teaching practices and attitudes with Q4: **"Would you say teachers have changed after the online education experience during the pandemic? If yes, what was the change? Please focus on communication with students and/or, colleagues, teaching methods and/or tools."**

A percentage 69% of teachers (22/32) believe they changed after the experience of the EOE, while 21% (7/32) state they have not changed. The negative answers reasoning is mainly due to ICT specialty of the respondents:

"Not much. As an ICT teacher I used online material; I used to communicate with my students through learning platforms and email; I used to teach online sometimes." [2121]

"No, since these methods of online delivery was used prior to COVID19 pandemic." [2120]

Teachers who assert that they have changed after the EOE experience highlight several features of blended learning:

"I have definitely changed, for example I communicate with my students through educational platforms and use those platforms to upload material or homework for my students." [218]

"Yes, I have changed as a teacher. I often use asynchronous communication platforms with students. I create teaching materials such as presentations, interactive exercises, cooperative homework." [217]

"I quickly started to explore new platforms to interact with my students in order to co-construct together user-friendly learning spaces" [233]

"The shift to online education has meant rethinking lesson plans to fit a very different format. Going online I was forced to adapt existing ideas or adopt existing technology." [215]

"I found that I was more efficient using sources to make my classes more interesting and livelier for me and my students." [213]

"I use more electronic communication with my students-sometimes out of school hours. I have material in electronic format, and I use them in physical class." [211]

"now I explain the structure of each lesson to the students and generally, I explain more things to them, I provide them with much more sources and less narrative (in History lessons). I try to make my lessons more interactive [...] I use collaborative documents more often with my colleagues." [232]

At Q4, 9 out of 13 practitioners replied "yes" and 2 of them "no". Among the positive answers, 3 strongly believe that teachers changed after EOE:

"the teacher's work has definitely changed after the pandemic - we use Internet resources more often (teaching materials, interactive games, multimedia presentations), we stay in online contact with students, and the circulation of documents is also largely done via e-mails" [356]

"The change was huge, teachers had to switch to a different dimension of education with the use of new technologies, a large part of teachers learned new programs and computer skills. Communication with students and their parents was more frequent, although it was done via computer or telephone" [351]

Except from the improvement of teachers' digital skills, other aspects emerge:

"They (teachers) realised the value of contact with students" [321]

"they saw other teaching opportunities and understood the importance of contact and interaction with the student" [353]

2.2.2.2 Challenges during EOE

Classification of collected data from teachers and practitioners' interviews reveals a second micro-category including challenges faced during the EOE. This category pulls data from Q6, Q7, Q11, Q12. Firstly, we recorded teachers' experience about students' engagement and academic performance with Q6: **"During the emergency online**

education, did you notice students' lack of attention, reduction of interest in learning and academic performance?"

Most teachers, 26/32 (81%), observed students' lack of attention, low motivation and struggled to keep students' pace in learning. It is interesting to understand their views on this topic. Some interviewees provide a rationale for students' performance:

"Yes. This was often due to the lack of appropriate living conditions, lack of appropriate equipment as well as good internet" [255]

"This was caused, for example, by technical difficulties related to technical problems (internet connection)." [254]

"I noticed students' reduction of interest in learning and academic performance. They preferred to watch movies and be relaxed. They were missing their everyday life, school, friends and outdoor activities. Parents were more tolerant because of the situation and were concerned about psychological effects on their children." [2122]

A few respondents focus on how they themselves struggled to combat students' withdrawal.

"I noticed the above-mentioned phenomena, but I also found strategies to reduce the zoom fatigue and the stress derived from the long hours spent in video lessons' attending by using, for example, the gamified approach, as told (Minecraft was a great tool to let them work together from remote), or transferring the classroom in the Virtual Reality space of Mozilla Hubs" [233]

"In order to overcome the problem, H5P has proven to be very useful: students could answer the questions on their own, at their own pace, and then we could comment and discuss the results together. Zoom polls were useful as well to this end" [222]

However, some teachers distinguish students' engagement and had several active students besides the inactive ones:

"Very good students became excellent and achieve even higher academic performance. Unfortunately, many students remained inactive and indifferent." [217]

"The excellent students did not miss anything from the online education, but all the other student categories were less interested in learning, had lower academic performance and, given the fact that the cameras and microphones were turned off during teaching, the teacher had no way of activating them as we do in classroom." [216]

"In my experience, they were pretty interactive with me and amongst them, making our classes joyful and more vibrant in some cases than our physical ones." [213]

At the same Q6 **"During the emergency online education, did you notice students' lack of attention, reduction of interest in learning and academic performance?"**, most practitioners' (10/12, 83%) responses are consistent in terms of student lack of attention and low performance during EOE while 2/12 report *"Sometimes yes"* [331] and *"I haven't noticed huge differences"* [321].

Practitioners' reflective answers vary as to the rationale for this attitude. It is either poor infrastructure,

"they were not really motivated or able to work properly [...] Most of students either had poor infrastructure (not good internet connection, not their own computer to work with)." [311],

"online learning was definitely less effective, if only because of the weak Internet signal in smaller towns, frequent disconnections, poor quality of transmission" [358],

or lack of conditions to work at home and distractions in concentration,

"Most students declare a decrease in attention and motivation due to shame about their housing conditions, family situation [...] lack of their own room or sharing a room with sibling. Some of the students were busy with other things during online classes, such as playing computer games, cleaning the house, preparing a meal for the family, etc." [352]

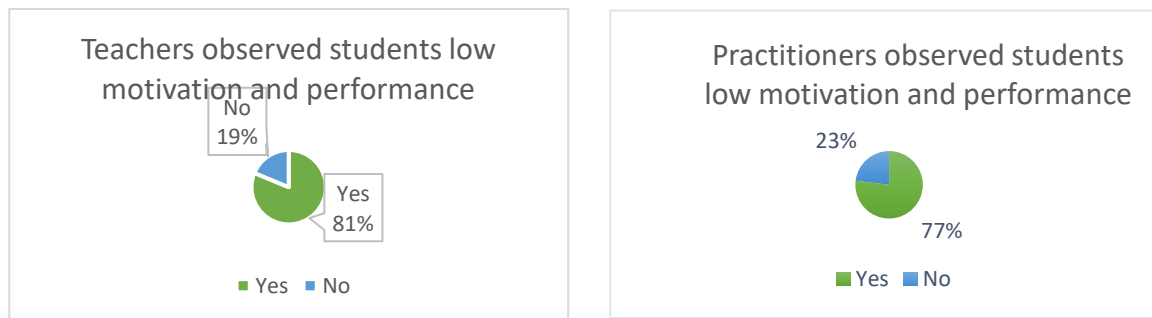
"students' lack of attention was because they were doing other things, using games and YouTube. They got tired more quickly or did not feel like participating in classes. They had very little contact with their peers. They missed going back to school. There was a reluctance to turn on the cameras." [351]

"There were students who had problems with concentration and those whose motivation to learn decreased" [355],

and instructional manners

"the main reason for this situation was the long duration of remote learning. It was difficult to motivate, reward and individualize (adapt) the content to the needs of students" [354]

"Yes, students (especially when their cameras were turned off) were not focused on the lesson" [356]



Picture 22.

Exploring the challenges of EOE, teachers were asked Q.7, **“What kind of guidance did students need in learning during online education?”**, aiming to document which were the needs of students in the online learning frame. Several the answers were classified as follows below:

The 8/32 (25%) of the sample mainly observed the students need for help with technical/practical issues and netiquette (the right use of online tools and content):

“Some of them needed help on how to use their microphones correctly, or how to use the hand gesture.” [213]

“How to use the various platforms” [2123]

“I think netiquette issues along with technical issues on the use of platform.” [232]

“They need help in using technology in the right way.” [231]

7/32 (22%) teachers experienced students' various needs for familiarisation with a different instructional structure:

“I also think that they need clear guidance on the lesson structure, something that requires a good preparation on behalf of the teacher.” [232]

“Some needed tips on how to get rid of distractions while others were so stressed with new situation that they needed shorter lecture techniques and more cooperative techniques” [253]

“They appreciated clear instructions and expectations of what is required from them as well as time frameworks given, which motivated them to work” [251]

“Clear instructions and clear expectations” [2125]

"something to attract their attentions continuously because online training can very easily become boresome" [2124]

"Smaller learning activities, more online interaction, more assignments and feedback" [2120]

"How to be consistent in their obligation to attend and participate effectively in the course" [211]

4/32 (12%) report the need for frequent communication with the teacher:

"communication that reduced the sense of disorientation. It became necessary to create groups on messengers that gave the possibility of quick and continuous exchange of information and a sense of belonging to a group. Giving frequent praise, rewarding for timely submission of works" [255]

"Children needed individual contact with the teacher, direct contact with their peers" [254]

"continuous communication through emails and through messages in the asynchronous platform mainly about their assignments" [216]

"The best support for students learning remotely was to communicate through e-mails and through messages in the asynchronous platform" [215]

3/32 (9%) teachers of the sample realised that the students' need for psychological support and motivation were essential:

"Talk about problems" [2511]

"motivation to work more effectively" [259]

"Motivation, understanding" [257]

In Q7, it is not rare for teachers to answer with reference to more than one needs of students: *"Some of them needed technical assistance, some psychological support."* [251], *"many kinds...technical, didactic, psychological"* [256]

Other interviewees (3) focus on the students' need for physical activities and being outdoors. which deviates the focal point of Q.7. Lastly, 2 out of 36 respondents did not observe during EOE needs that were different than in the physical class.

Practitioners replied to Q7 **"What kind of guidance did students need in learning during online education?"**,

5/13 report need for help with technical issues:

"Sometimes, they needed some help with technical issues, such as how to connect the microphone, headphones, video camera, etc." [321]

"help with the digital environments" [311]

"hardware security, internet access" [354]

"Students needed help in using computer programs, sending work, logging in, etc." [351]

Other 5/13 declare students' various needs for familiarisation with a different instructional structure:

"Pedagogical needs (compensatory classes in subjects)" [352]

"They needed clear and concise directions for what they were expected to do and how. Also, they needed support for their time management, help with the digital environments, motivation to stay focused in learning" [311]

"family support to help with learning, checking the degree of understanding of instructions" [355]

"They often only logged on to the lesson but did not participate well in it. It was difficult for them to learn to work independently, so they needed a lot of help" [358]

Communication in general or with the teacher is highlighted by 5/13 practitioners:

"Contact with the teacher is what they needed" [352]

"Contact with another person" [357]

"Students complained about the increased difficulty in communicating with the teachers in reference to the topic they were learning. I tried to help them, scheduling bilateral sessions" [321]

4/13 also observed the need for psychological support and motivation:

"they were looking for contact, conversations going beyond the lessons" [354]

"psychological (in terms of establishing and maintaining relationships, fear and fear of a terminal illness, treatment of trauma after the loss of a loved one)" [352]

"psychological support due to isolation and lack of contact with peers" [351]

"motivation to stay focused in learning activities" [311]

Q12 was set with the aim to record how teachers met the needs of EOE: **"Where did you find support regarding the challenges of online education?"**. 10 out of 32 (31%) of the

teachers interviewed turned to “colleagues” or “other teachers” for support. Other sources of teachers' support in the unprecedented EOE were:

9/32 (28%) from online tutorials/resources/webinars

4/32 (12%) nowhere

2/32 (6%) online teachers' groups

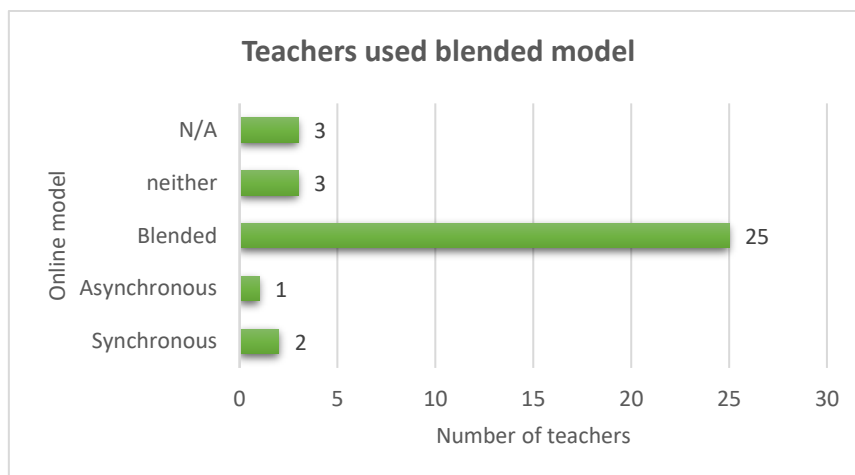
1/32 no need for help

At the almost same Q.12 **“Where did teachers find support regarding the challenges of online education?”**, when addressed to the practitioners, data received show they believe teachers' support was obtained from online groups, forums (6/13), via online training, webinars (3/13), and teachers were supported by their colleagues or other teachers (3/13).

2.2.2.3. Effective features

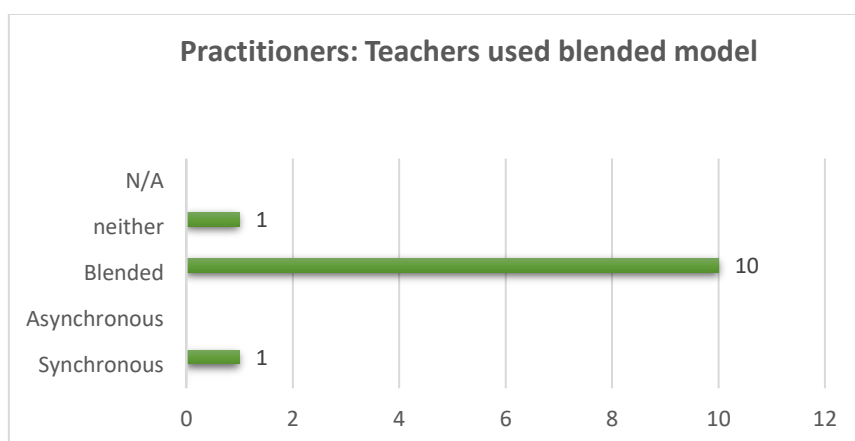
Regarding the third micro-category of collected data, it shows the interviewees' perceptions for effective features of emergency online education. In Q5, **“Did you use blended learning, both synchronous teaching (video meetings with students) and asynchronous teaching (the use of a platform for teaching material, communication, collaboration homework, etc.)? Do you think both types were effective for students' learning?”**, at first subquery, the majority of teachers, 25/32 (78%), used the blended method, while a small percentage used only synchronous (2/32) or asynchronous (1/32) mode and 4 did not answer.





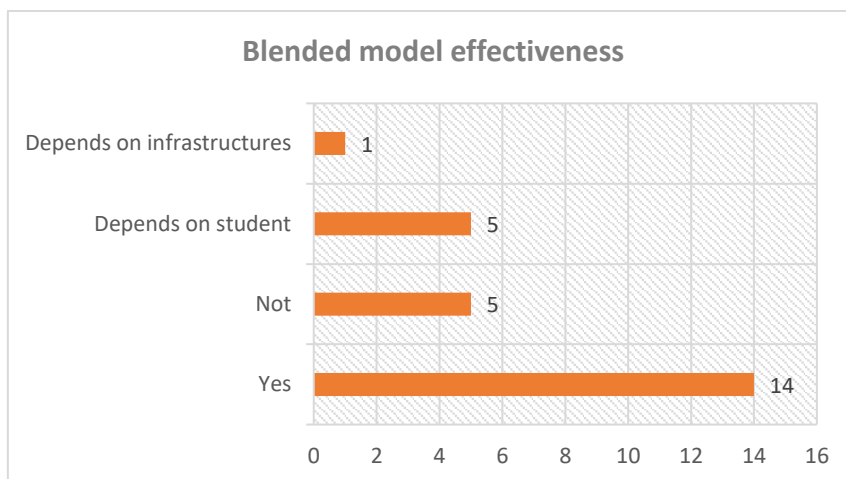
Picture 23.

At the same Q5, a high percentage of practitioners (76%) observed that teachers used the blended model.



Picture 24. Practitioners' opinion on the use of modes of online learning.

At Q5 second subquery, regarding whether the blended model was effective or not, 43% (14/32) of the teachers gave a positive answer. However, it is worth noting that 5/32 answered "no" and 5 more relate effectiveness with students' personality or type of learning.



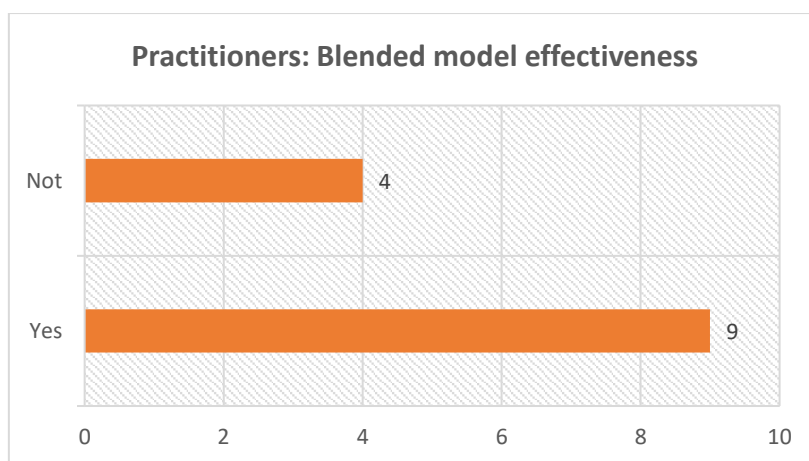
Picture 25.

"Some (students) were very comfortable with both types, some couldn't get focused if they didn't see a teacher before them. It was my observation that students showing introvert behavior were more pleased with blended learning while extraverts were quickly losing their focus on asynchronous teaching" [253]

"They were effective to some extent only. They worked for students who were well-organised and motivated to study with self-discipline, who had space and good studying conditions at home" [251]

"some few students, who were shy or less participated in live classes, they felt more confident and expressed more during online meetings (with cameras off)" [232]

At Q5 second subquery, regarding whether the blended model was effective or not, 69% (9/13) of practitioners gave a positive answer.



Picture 26.

Part of the interviewed practitioners (2/13) assert synchronous online teaching was effective and 2 others that neither synchronous nor asynchronous mode were effective:

"Yes, but video meeting with students was more effective" [356]

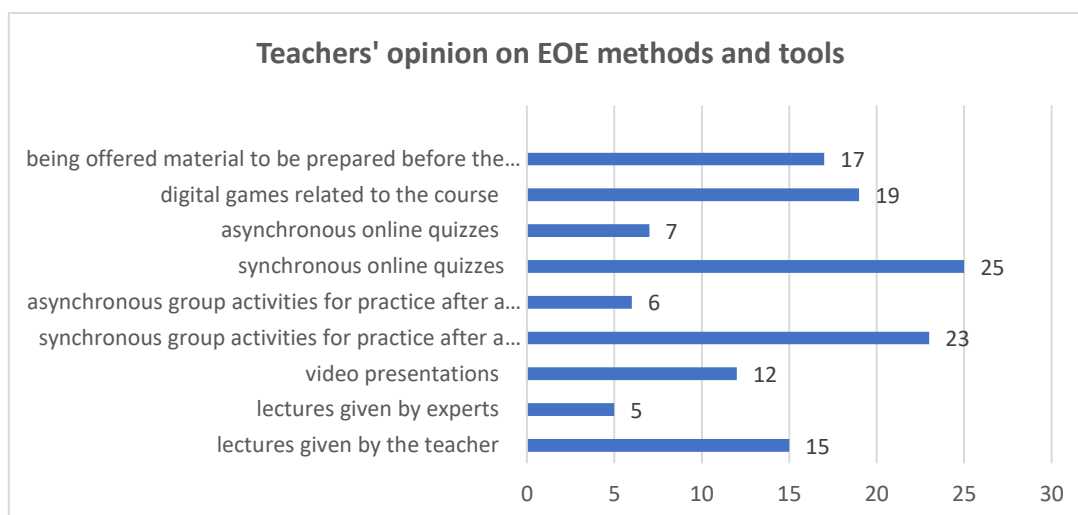
"The effectiveness seems to be greater in the case of synchronous teaching. Video meetings with students were certainly more mobilizing to work, provided that the camera on the student's and teacher's computers was turned on" [358]

"Yes, they did, but I don't think it very useful" [333]

At the same micro-category of results regarding the effective features of EOE, interviewees were asked to select among a list of features in Q.8. **"Do you think students learn better online with:**

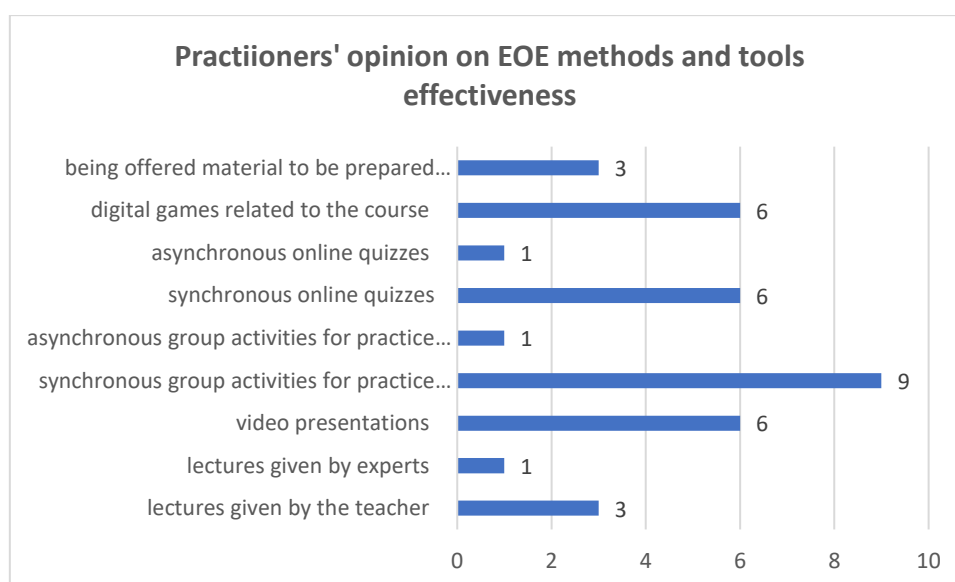
- **lectures given by the teacher**
- **lectures given by experts**
- **video presentations**
- **synchronous group activities for practice after a teacher's presentation**
- **asynchronous group activities for practice after a teacher's presentation**
- **synchronous online quizzes**
- **asynchronous online quizzes**
- **digital games related to the course**
- **being offered material to be prepared before the video meeting with the teacher and other students (flipped classroom)**
- **other (please explain in brief) "**

As demonstrated in the chart below, synchronous group activities for practice after a teacher's presentation (25/32) and synchronous online quizzes (23/32) are the top preferences of teachers as effective tools during EOE. It is worth noting that teachers voted the lectures given by themselves at the 5th position among 10 options, after digital games (19/32) and flipped classroom practice (17/32). The last effective tools seem to be, according to teachers' perception in the list, asynchronous quizzes, asynchronous group activities and lectures given by experts.



Picture 27.

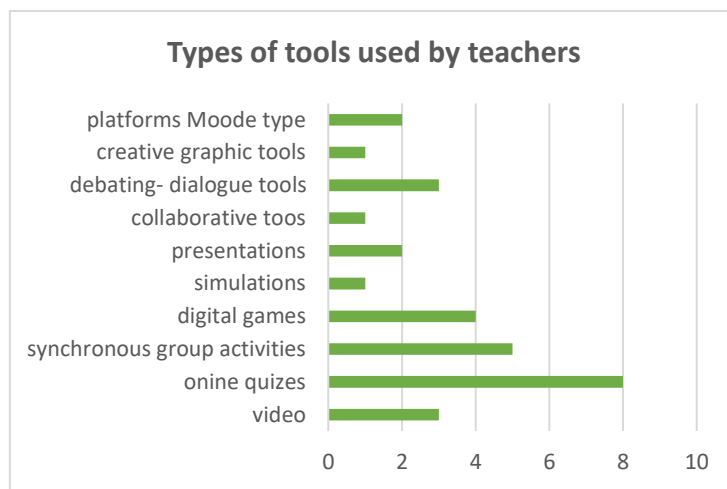
The results of Q8 answered by practitioners show that 9/13 estimate synchronous group activities as the top effective tool and at the second position digital games, having synchronous online quizzes, video presentations are recorded with equal votes. As follows next, the lectures given by teachers are at 3rd position, and at the final position among the given ten options we find together: asynchronous online quizzes, asynchronous group activities, lectures given by experts.



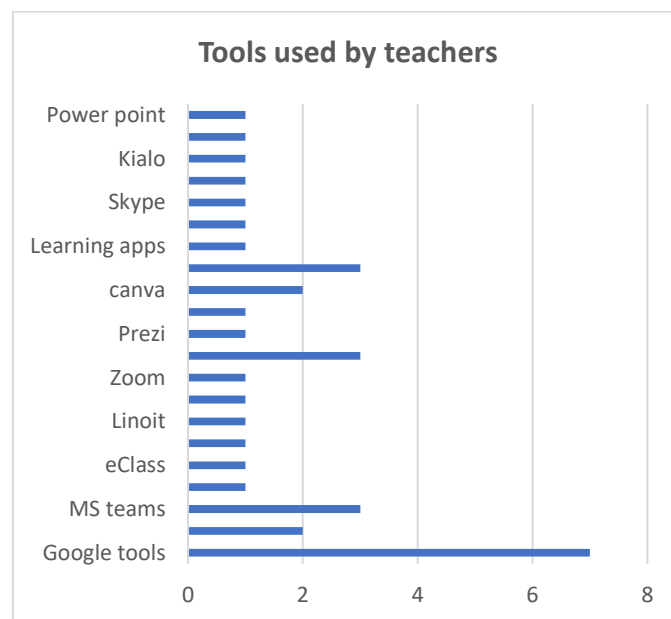
Picture 28.

In the option "other", one more suggestion was offered, the *"remote trip to the museum, viewing the spectacle, sights, cities"* [354].

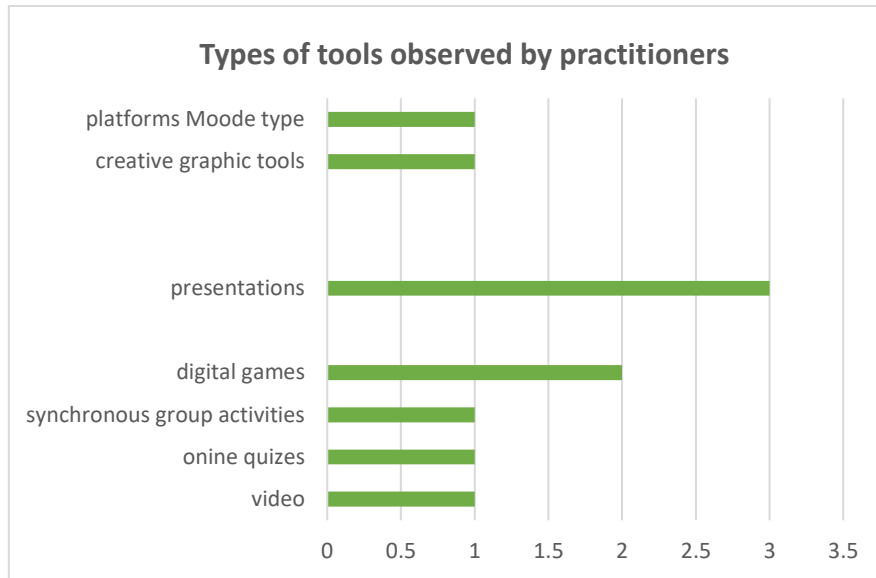
Within the sub-category of exploring the effective features of EOE, in Q9 **“From your experience, which methods and tools of online education were more effective for students' learning? Please, make a list with some of them. Offered”**, teachers listed types of tools and methods which they implemented during online classes, as well as specific applications. At the same Q9, practitioners indicated types of tools, methods, and applications which they observed in their networks. The lists are visualised in the charts below, showing how many participants of the sample mention they used each tool or application.



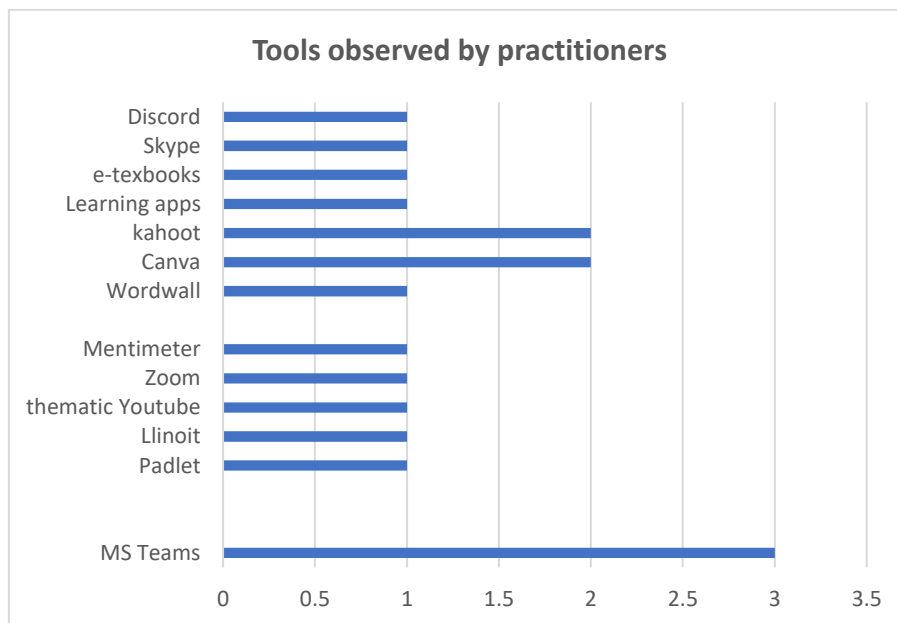
Picture 29.



Picture 30.



Picture 31.



Picture 32.

In the micro-category compiling the effective features of EOE, Q10 records evaluation methods and tools. The 37,5% (12/32) of teachers preferred quizzes as an assessment tool, and similarly polls (3/32) and online questionnaires (2/32), therefore the 53% of teachers transferred to the online class the most common assessment tool in the physical class. Games were used for evaluation purposes by 5/32, individual homework assignments, written or oral, by 5/32, peer assessment by 4/32 and group work by 3/32.

Debates and oral questions are used by 2 teachers from the sample. Quizzes, questionnaires, and polls are the most often observed evaluation tool according to 10/13 practitioners.

Most participants used several types of assessment:

"Online quizzes, creative group work (e.g. creation of a comic, a presentation, a short video, a poster)" [218]

"Online quizzes, homework assignments that the students had to upload on the platform" [216]

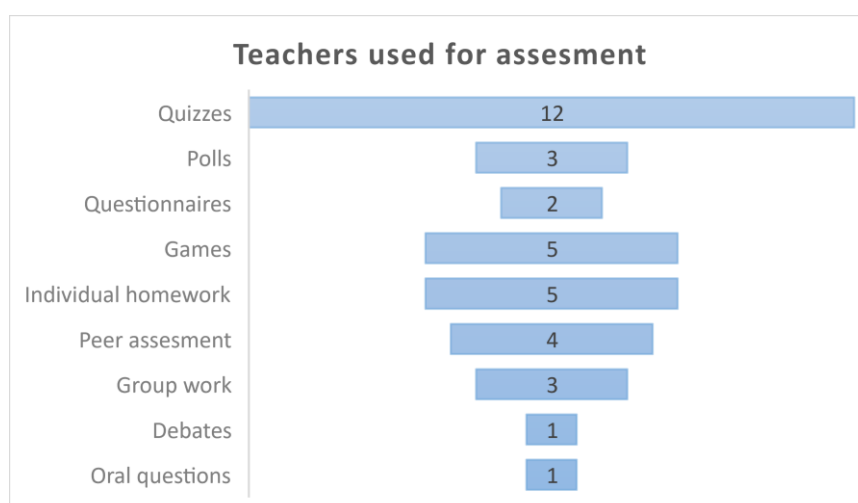
"Writing assessments and oral assessments" [221]

Doubts about online evaluation are also recorded:

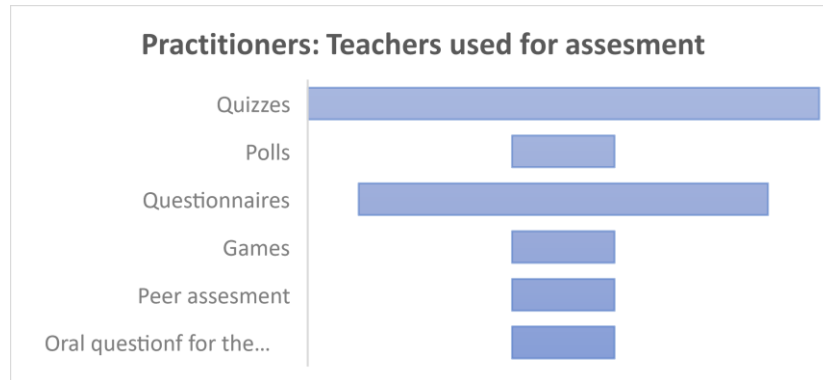
"None of the methods were particularly effective because the results were not reliable." [211]

As well as more reflective replies:

"During the pandemic I noticeably increased my students self-evaluation abilities by asking them to continuously supervise their progress and contents' acquisition through simple tests they did autonomously and freely (without being forced, I mean), I wanted them to consider the online education as a chance to develop their auto critic skills: I avoided to stress them with a "study to test" approach, I preferred a more relaxed smoother attitude towards evaluation by choosing formative and informal assessment strategies." [233]



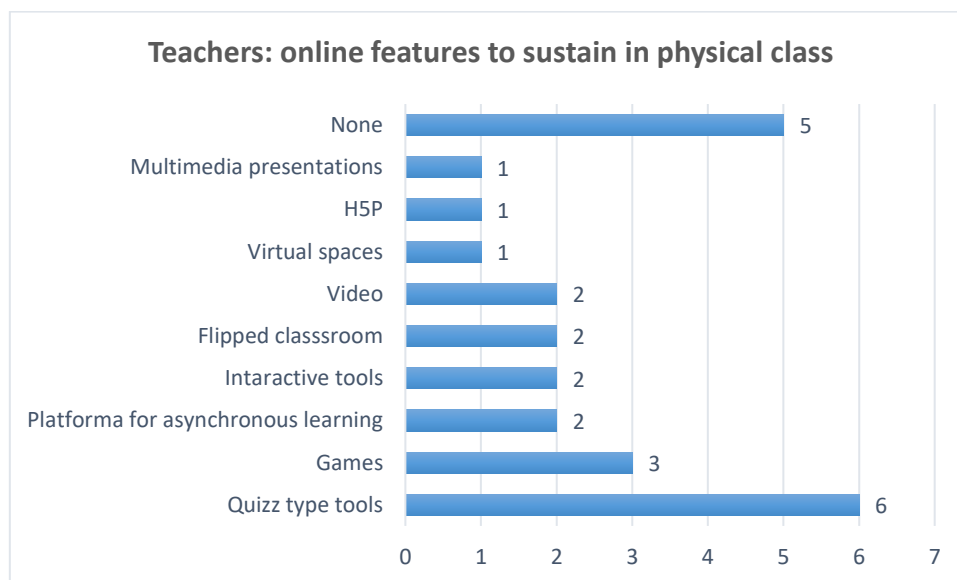
Picture 33.



Picture 34.

The interview closes with an invitation to the participants, in Q13: **“Did you find effective methods and/or tools of online education, which you suggest adopting in the physical class?”** to investigate whether they would be willing to further exploit the experience of EOE in education.

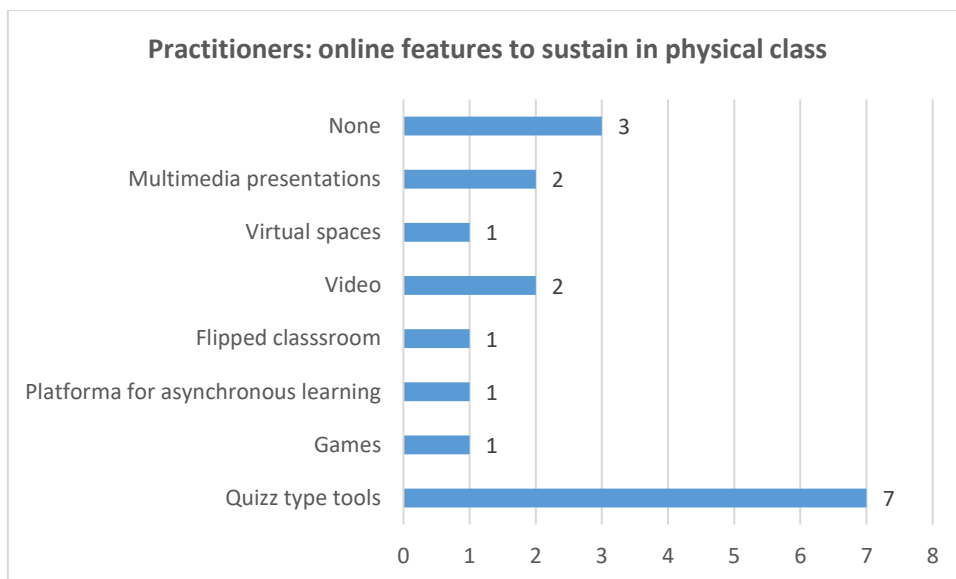
Most teachers who gave a positive answer suggest more than one method or tool. We find 6 suggestions for quiz-type tools, 3 for games and 2 suggestions equally for video, interactive tools, and platforms for asynchronous learning. Besides that, 5 out of 32 (15,5%) teachers do not find effective methods/ tools of EOE to sustain in physical class.



Picture 35.

Quizzes gain students attention according to teachers' perceptions:

“Online quizzes because students like them, especially when the quizzes are competitive and they are motivated to answer carefully so as to win” [2122]



Picture 36.

Like teachers, many practitioners, 7/13, suggest quizzes to be sustained in the physical class as an effective tool. Some other mentioned features are related to instructional elements of online learning, like time management, course length and assessment online:

“I think that the factor of time management in class, which was really challenging during online education, is worth to be reconsidered in physical class. [...]” [311]

“the lesson length [...] time frame of 45 minutes seemed untouchable until recently. Distance learning has shown that it is an element that is easily changed and, most importantly, it can be easily adapted to the current needs of the lesson” [357]

“The slogan “school without grades” appears in the mainstream more and more often and seems to have as many supporters as opponents.” [357]

2.3. Conclusions of qualitative research

Qualitative research of the study aims to explore best practices and tools which the sample of participants, students and teachers, indicate as supportive for students' self-directed learning based on the experience during the online education experience. In

accordance with the conduction of the questions of the interviews, results of the study were compiled in three micro-categories, for both students and teachers.

Regarding students, the micro-categories are: 1. Learning preferences and attitudes towards learning, 2. Difficulties and shortages during EOE, 3. Effective features of EOE.

Regarding teachers, the micro categories are: 1. Teaching preferences and attitudes, 2. Challenges during EOE, 3. Effective features of EOE.

Students' results

At the 1st micro-category, results show that regarding the way students learn, their strategies and techniques, 57% of the sample adopts reading/writing types of learning, while 37% use practices of aural or auditory learners. To the same direction of learning attitudes, 81% of the students sample does homework without help at all, a fact which reveals that they have some experience of independent learning for regular school activity. Exploring learning norms, 27% of the interviewed students believes that teachers help students to learn when they respond to students' individual needs, and another 24% thinks that students learn better when the teacher enhances their active participation and interactivity, either with the teacher or in collaboration between students in group work activities. A smaller 13% of students expect from teachers to organise knowledge for them by offering examples, making the objectives clear, recommending different learning methods and sources. It is interesting that 16% of students focus on more sophisticated cognitive means, asserting that teachers help them in learning by constructing learning as a social environment by building relations in class.

Students results at the 2nd micro category, specifically the difficulties and shortages during EOE, demonstrate that during EOE what students mostly missed was the physical and real time interaction between students and the teacher, which is common when online and more in the frame of social isolation during the pandemic. Related to the previous assertion, students were not satisfied with communication in EOE, as they



needed more contact and guidance by the teacher and their classmates for the learning tasks.

As it was the first time in history that schools went online and for a long period, without teachers' preparation on how to construct new online routines, often different from the physical class, it is understandable that there were shortcomings. In addition, the structure of online classes is highly important in e-learning activities so as to prevent participants from feeling isolated. Besides that, it is noteworthy the lack of concentration that occupied students during the EOE, which is reported among their difficulties together with the often inconvenient for study environment at home. This factor should be seriously taken into consideration in designing online activities for formal education, due to their age and probably less maturity than adults, whose participation in distant learning has been studied a lot.

The profile of students learning online is enriched with results of the 3rd micro-category, the perceptions regarding the effective features of EOE. Among the interviewed students, 13.5% prefer blended learning, while 43% are more satisfied with only synchronous learning, and 40.5% are more satisfied with only asynchronous learning. Considering that at European and global level blended learning has been promoted by educational policy, mainly based on the effectiveness of the model in adult education, it is worth to further explore students' perceptions on blended learning for educational policy purposes, to design the future formal education but for life-long learning as well. When the interviewed students were invited to select their preferences for online tools and practices among a list, 75% of them highlighted lectures given by the teacher as an effective practice for their learning.

Close to the previous choice, highly estimated by the 59% of students as effective tools and practices are lectures given by experts, digital games related to the course and the flipped classroom practices. The desk research (study, part 1) provided play as a popular resource and an educational tool to keep the attention of children and youth high (Filosa & Parente, 2021). Positive results are found in reference to learning; in fact, an increase is seen in the aptitude to explore and to acquire new knowledge via playful activities (Traetta et al. 2022).



In the case of the Flipped Classroom model, which is favored by the students, it is an indicative element towards students' capability of managing their time and promoting self-regulation. As stressed in the desk research findings, several authors highlight the added value of employing FC in different educational systems like the Finnish, Greek, Italian (Erkko Sointu et al. 2022, Karatsiori et al., 2021, Karalis & Raikou, 2021, Filosa & Parente, 2021). Furthermore, among five most effective practices for students we can also find synchronous group activities for practice after the teacher's presentation, as expected for the characteristics of interaction and oral – visual communication features.

As the interviewed students and teachers were offered the same list to identify the optimal practices, a comparison of the two groups' choices is interesting to notice differences and common perceptions. An example is that teachers' 1st choice, synchronous online quizzes, is 5th at students' preferences, and students' 1st preference, lectures given by the teacher, appears 5th at teachers' preferences, and 3rd among the four practitioners' choices as a practice which is considered helpful for students to learn better online. Students' persistence in the relationship with the teacher shed light on basic pedagogical principles or on the fact that teenagers had a difficulty to shift to the online frame and adopt its features. Despite differences between students and teachers' perceptions of effective online practices, digital games related to the course is among the first choices of both groups, inserting the study in the literature which highlights gamification as a contemporary approach in learning.

Supplemental to the previous parameters is the suggestion by the interviewed students of the elements of online education they would approve for further adoption in the physical class. The results are scattered, with the biggest percentage, 21%, given to online platforms which support asynchronous learning and facilitate self-study like MS Teams, eclass, Google workspace etc. Other suggestions by the students are podcasts, video presentations, digitalised students' books which are based on tools provided to public education and in teachers' training on digital tools by many European countries educational policy during the last decade.



Teachers' and practitioners' results

The 1st micro-category includes teaching preferences and attitudes in on-site and online education. Regarding learning design, 90% of teachers declare they often use lesson plans or didactic scenarios and 66% of practitioners have the same opinion. A high percentage of 94% among the interviewed teachers usually makes their own teaching material, meaning they usually adopt material from several resources and make their own synthesis or they adjust existing material to the needs of their class.

On the same topic, 84% of practitioners assert that teachers make their own material while some of them specify that teachers are inspired by publishing houses material or from the Internet, however they do not create an original one. 81% of teachers collaborate with colleagues mainly to exchange material. 9% of them collaborate with peers online mainly in social media groups. Half of the practitioners observe that teachers collaborate with peers regularly while, from the other half, a few believe the teachers are reluctant to share the products of their work, they mainly exchange experiences or coordinated curriculum, or it is more common to collaborate between teachers of the same specialty.

Regarding teaching attitudes, 69% of teachers believe they have changed after the experience of EOE and 21% have not changed. Negative respondents' reasoning is mainly the ICT specialty of the respondents, thus their familiarization with digital tools. Teachers who assert that they have changed highlight the adoption of several features of blended learning; they create digital teaching material, they use asynchronous communication platforms with students, they explore different sources to make classes more interesting and livelier, they keep electronic communication with students out of school hours, they make lessons more interactive using collaborative tools with students and colleagues as well, etc. Likewise, 69% of practitioners believe that teachers have changed after the experience of EOE mainly because of the improvement of competitive digital skills but also since teachers realised the value of contact with students and saw other teaching opportunities of contact and interaction with them.



The classification adds in the 2nd micro-category the challenges of EOE. 81% of teachers observed students' lack of attention, low motivation, reduction of interest, although some teachers distinguish "good" students' who continued their engagement. A big number, 83%, of practitioners observed students' reduction of motivation and academic performance too.

Among the challenges of EOE, the kind of guidance that students need in the online frame is explored via teachers' observations. 25% of the sample noticed that students needed help with technical and practical issues, and 22% of teachers faced students' various needs for familiarisation with the different instructional structure, the need for clear instructions and expectations, how to attend and participate effectively in the course. 12% of teachers report the need of students for frequent communication with the teacher and 9% realised that motivation by the teacher is essential.

From the sub-group of teachers, among the practitioners, 38% observed that students in EOE needed help with technical issues, 38% declare that students had various needs with navigating in a different instructional structure and 38% highlight contact with the teacher and peers, psychological support, and lack of motivation as their main needs. Most of the interviewees mention a combination of needs. The unprecedented EOE and its challenges led 34% of teachers to obtain support for themselves from online tutorials and resources, webinars, and online teachers' groups. Bearing in mind that 81% of teachers often collaborate with colleagues mainly to exchange material at physical school, it is possible that the transfer to digital environments has reduced this ability.

The 3rd micro-category demonstrates results regarding the effective features of emergency online education. 78% of interviewed teachers implemented the blended model (synchronous and asynchronous activities) in online learning, as it was suggested by the educational policy in European countries. Likewise, most practitioners (76%) realised that most teachers used the blended model. Regarding the issue of whether the blended model was effective or not, 43% of teachers gave a positive answer as well as 69% of practitioners, who estimate blended learning was effective. 15% are more sceptical and relate the effectiveness of the model with students' personality or type of learning.

Aiming to document effective practices and tools of EOE based on the experience of teachers and practitioners, they were invited to select among 10 options. Participants indicated that synchronous online quizzes (78%) and group activities for practice after the teachers' presentation (71%) are the most effective tools. Digital games come third, close to the flipped classroom method. It is obvious that teachers and practitioners perceive synchronous online learning as more effective.

During the exploration of EOE effective features, teachers did not include the practice of lecture in their list of methods/practices which they used online. The fact is corresponding with their opinion, where they voted teachers' lectures as 5th in the list of methods for students to learn better online and it is in line with modern pedagogy guidelines, which encourage less lecture and more interaction in class. However, as said before, 75% of students asserted teacher's lecture as their favourite one among preferences for online learning methods. It appears that students seek for practices of the physical class in the online class, while teachers adopt more student-centred practices.

Although teachers expressed themselves positively towards online learning, they were active during the EOE, the majority implemented blended learning and tried several online tools, when they are invited to reflect on methods or tools of online learning which could sustain besides physical class, the list is not long. For both teachers and practitioners, the first suggestion by far is online quizzes which on one hand make the class alive thanks to its competitive character and, in addition, a quiz is also a favourite assessment tool. It is worth to mention that 15% of the sample answered "no", they do not find online tools effective for the physical class.

3. Conclusions of the study

The aim of the study is to explore and analyze the experience of teachers and students from secondary and higher education, in terms of the emergency online education with particular attention to a) teaching and learning patterns and practices, b) the perceptions of changes produced by EOE and c) whether elements of EOE should be sustained in a blended learning school model, to improve students' capacity of self-directed learning.



a) Teaching and learning patterns and practices,

As the desk research shows, educational policy at European level appreciates blended learning as a focus on converting personal or professional experiences into skills and competences that are important for an individual at each life stage (SWD, 2013). Blended learning is applied in adult eLearning, and it is recognised as the most effective model in this area. However, in formal education It has been applied only during the schools' closure and its shift to online education. Due to the emergency of online education at schools, many important elements of blended learning and online learning in general were in shortage, as for example good Internet connection, personal devices for students and teachers, detailed Instructional design and training of the teachers.

According to the desk research, teachers were forced to adopt interactive methods and supporting material to raise student engagement (Montarini et al., 2022) and blended learning was by far the most popular mitigation plan applied during the first year of EOE (Nunes, 2021). Data from the qualitative research of the study verify that a high percentage (78%) of teachers made efforts to implement blended learning, although they express serious doubts about the effectiveness of this model to students, and the interviewed students do not express satisfaction from blended learning. Students admired separately either synchronous or asynchronous learning.

An important factor in studying the implementation of online education in formal education is to consider adolescents' preferences in learning. Regarding the way students learn, 57% of the sample in the qualitative research adopt reading/writing types of learning while 37% use practices of aural or auditory learners. Most interviewed teachers and practitioners (81%) reported students' lack of attention and low motivation during EOE, which indicates that the different means and learning environments did not meet their needs.

Additionally, the literature review of the study stresses that material design and lesson planning arose as core elements on online education, especially in the asynchronous learning where the teacher is not present (Klada, 2022). Qualitative research reports that a high percentage of participant teachers use lesson plans and create their own

material, although their resources in EOE are mostly the same as before. However, in correlation with the desk research findings, teachers quickly learned to use technological platforms but interaction through them was not reported as of high quality (Niem & Kousa, 2020).

b) Perceptions of changes produced by EOE

During EOE, students missed group work, important discussions in class, communication with the teacher and often faced difficulties to concentrate in environments at home that were inconvenient for studying. As teachers report in the interviews, students needed their help to familiarise themselves with the different structures of online learning, and therefore they asked for more frequent communication with the teachers and motivation by them. Despite the poor support from the side of the educational policy, teachers obtained support from tutorials, webinars, and online teachers' groups.

69% of the interviewed teachers believe they have changed after the experience of EOE and when they describe the change, several features of blended learning appear, for example they keep using educational platforms for asynchronous learning, they create digital material which they use in physical classes, they have been rethinking lesson plans, and they try to make their lessons more interactive with collaborative activities.

c) Elements of EOE that should be sustained in a blended learning school model

The interviewed students suggest platforms for asynchronous learning to be sustained in physical classes, as they enjoy the practice of organised and available digital material (notes, extra exercises, interactive videos, quizzes). Students also recommend quizzes and games, podcasts, meetings in closed groups for practising, and digitalised textbooks.

From the side of teachers, quizzes are recommended by far, and other suggestions include more videos and presentations, flipped classroom practices, platforms for asynchronous learning. Data showing that students favour asynchronous tools offer a hint that students feel capable of self-directed learning. Towards this direction also

leads the fact that students favoured the flipped classroom method, which recommends the preparation of the student before the teacher's lecture and more active participation in class. A FC important factor is to guide students in managing their time and to promote self-regulation.

Asynchronous learning platforms, flipped classroom and games in learning are elements of online teaching which are endorsed in terms of online teaching at European level by both students and teachers according to this study, the desk research and qualitative research results as well. The findings are worth to be explored more with the aim to increase students' attentional skills and a sense of control over the educational-media experience. Regarding these elements, positive results are found in reference to learning, and an increase is seen in the aptitude to explore and to acquire new knowledge alongside with students' time management and autonomous learning.

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