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Is the use of Internet in Remote Teaching the Future in Education?

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Abstract

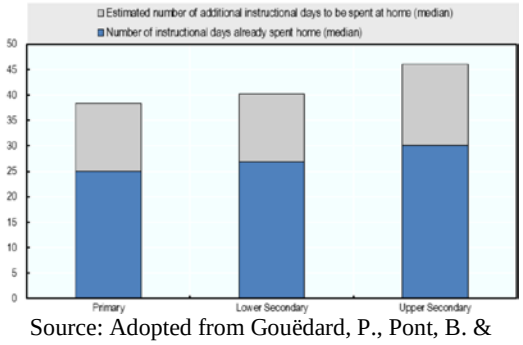
The spread of the COVID-19 pandemic has affected all areas of society, including education, as globally, many countries proceeded to the temporary closure of schools and universities and it has been estimated that almost 1.5 billion pupils and students have been affected by the closure of school units which has deepened the educational inequalities and has affected vulnerable population groups, as the young pupils. In an effort to mitigate the effects of the hygienic crisis that has occurred, education systems all over the world have chosen to use remote teaching as an emergency solution. Therefore, the digitalization of education has been a means of teaching through times of crisis with the extensive use of information and communication technology systems. This unexpected global crisis has forced the finding of quick solutions; therefore remote teaching was done abruptly without time for a long-term education design that would help in the methodical integration of practices of distance education. Remote teaching may have caused a lot of obstacles, but overall it has demonstrated the need and the benefits that may occur of its proper use, making remote teaching a means of education for the future.

Keywords: closure of schools, remote teaching, digitalization, benefits, future.

1. Remote teaching in the EU and Greece

Remote teaching has been a challenge for most countries in the EU, as the classroom can never be fully transformed into a digital form; nevertheless the months of remote teaching that was a necessity in 2020 due to Covid-19. Unlike many other remote practices, such as remote working that was widely implemented during the Covid-19 education does not seem to continue to gain ground, as it does not seem to appeal to teachers, the students, or their families. As of April 1, 2020, an estimated 1.379 billion students worldwide were affected by school closures. All these students were invited to continue their education online, in a world where only half of the world's population (53.6%) has an Internet connection. Practically, this leaves almost a third of students out of distance learning[1].

Figure 1: Impact of school closure on education continuity, May 2020.



Source: Adopted from Gouëdard, P., Pont, B. & Viennet , R. [1]

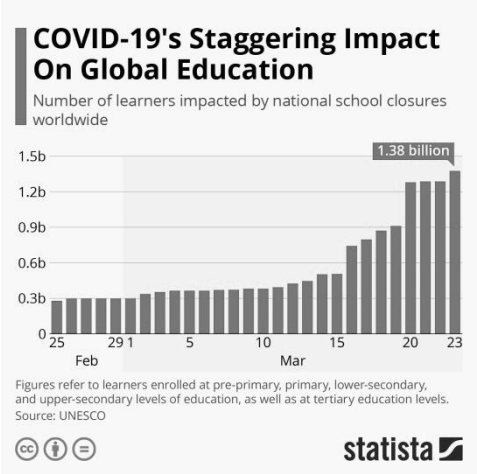
Figure 2: Internet access. Total, % of all households. 2021, Annual incl. OECD, all countries. Retrieved 29/08/2022 from https://data.oecd.org/ict/internet-access.htm

In theory, remote teaching sounds like a convenience that would greatly support the work of teachers. But teachers state that it was easy for the tech-savvy ones, as they didn't have much of a problem and they could be able to adapt the lessons to the new, digital environment but it has also been reported that older teachers found it very difficult to learn how to teach in the e-classroom and how to use the

[1] https://unesdoc.unesco.org/ark:/48223/pf0000373233, retrieved 30/08/2022

computers or tablets that were required for the remote teaching, as they only possessed knowledge that limited their skills to easy tasks such as sending e-mails [2]. Furthermore, there appeared to be a lack of interaction between the teachers and their students, but also among the students with their peers. That led to a lack of dynamics within the virtual classroom, which seemed to make the educational experience impersonal and boring. Several studies show that many students were discouraged by the lack of interaction with the teacher in the virtual classroom and that resulted in a feeling of isolation and loneliness, resulting to a lesser student's engagement in the course. That has been an issue which has been debated for many years in relevance to the partial transition to distance learning that has been offered previously in higher education but in certain institutions [3].

Figure 3: Covid-19 impact on global education. Retrieved 30/08/2022 from https://assets.weforum.org/editor/35ZTVoUUKZ8R135jMCnLB3YirWPKRy49J6fKpf7q2ek.jpeg



In Greece, as it happened globally, it was decided to suspend the operation of schools, and remote teaching was implemented for the whole country, starting from the smallest grades and ending, in the spring of 2021, with the inclusion of all high school classes and universities as well. Although Greece remains below the European Union average in the field of high-speed broadband communications, its progress has been significant in recent years and internet usage and facilities has reached a percentage of 81% of households, while 4G coverage was 97% in the year of the Covid-19 breakout. In the previous year and particularly 2019, just 7% of internet users were using their connection for online courses, while 22% of the population had never used the internet, and as far as the EU was concerned these numbers were 11% and 7% respectively. In Greece and especially in May 2020, when remote teaching had been a reality for almost two months, a number of 766,458 students were connecting every day to digital classrooms, leveraging tools developed by tech giants such as Cisco and Microsoft. According to data from Cisco, whose platform named "Webex" was used to achieve remote teaching, Greece was one of the first countries in digital participants to remote, online teaching. Last year, in March 2021, approximately 65,000 online courses have taken place in Greece every day, with the participation of 1.4 million students and 156,000 teachers and professors[2].

2. Remote teaching and obstacles

In March of 2020, schools and universities almost globally were called to face unprecedented situations and suspended their vital operations due to COVID-19, making remote teaching with digital platforms a necessity. The unexpected and sudden closure of schools and universities found both the students and the teachers unprepared for a new era in education, as it was called upon without any preparation and almost no time, to learn how to "operate" in virtual environments [4]. The teachers' response to these new, unexpected conditions of remote teaching during COVID-19 was one of the biggest educational challenges of the last 50 years [5]. Both teachers and pupils were all of the sudden required being almost proficient in the features used in educational platforms in order to have the ability to access the

[2] https://pnai.remaco.gr/wp-content/uploads/2021/01/%CE%94%CE%B5%CE%AF%CE%BA%CF%84%CE%B5%CF%82-DESI-2020-%CE%95%CE%BB%CE%BB%CE%AC%CE%B4%CE%B1.pdf, retrieved 30/08/2022

education process. However, this access was not a guaranteed deed for everyone, as there were obstacles that presented in knowing how to operate a PC and owning an electronic device or access to the internet, as well. Furthermore, there appeared many social imbalances among students, as teachers found it difficult to involve all learners in the distance learning process and that has an immediate effect on their academic performance [6].

However, this experience had a positive side as well, as the students, who were asked to face this unprecedented situation, managed to develop the autonomy of their learning. Although there was this positive affect, remote teaching has changed the family's life, as parents were faced with many difficulties and new situations, such as the necessity of their presence at home, as long as younger students were involved, as well as the need for many appliances that could be used in online teaching. The digital transformation in the education area has affected the way students, parents and teachers lived, worked and taught [7].

One of the most important aspects was the social isolation that the pandemic brought that has immediate effects on the children's social and psychological needs. Also, one major problem was the inequalities that were created due to remote teaching. In live classrooms, all children are equal, as they co-exist in the same space and study the same books. However, in the digital classroom, some children lack the same opportunities as others, as there are cases where students didn't have a computer and used their mobile phones to participate to the education process. Therefore, they couldn't easily participate when the teacher asked for their interaction, especially if the device they had been using was not a new technology. In other cases, there were students who had no internet or had poor connections [8]. There were also cases of families whose finances didn't allow them to have either a computer or an Internet connection, while there were also cases of families refusing to proceed with a purchase or connection, even with the subsidies and facilities provided, mainly in cases of minorities, refugees or families with serious financial problems [9].

"Save the Children" estimates that an average of 74 school days were lost during the pandemic in schools around the world or a third of the school year[3]. The organization also states that Covid-19 has brought an "*unprecedented global education emergency*" and there have been estimations that Covid-19 has made a $77 billion gap in education spending as long as the poorest children are concerned and fears have been expressed that children in 12 countries face a high risk of dropping out of school. Meanwhile, in 28 countries children are at moderate or even high risk of not returning to school and especially girls often face an incretion to face gender-based violence, child marriage and teen pregnancy during the times of the schools being closed[4].

Table 1: Lost days of school during the pandemic. Retrieved 30/08/2022 from https://www.savethechildren.net/sites/www.savethechildren.net/files/Methodological%20note_23022021.pdf

Region	Total lost days (billion)	Lost days per child
Sub-Saharan Africa	21	69
South Asia	46	109
East Asia and Pacific	19	47
Latin America and the Caribbean	13.6	110
Middle East and North Africa	7.1	80
Europe and Central Asia	5.6	45
North America	0.2	4
Total	**112**	**74**

3. Teachers and remote teaching.

Teachers have faced many difficulties with the extended use of remote teaching, especially in the first months that it was done, as the online courses were completely different than teaching live in class. First of all, they faced the loss of the co-existence with their students and colleagues and the necessary "human touch". There were also problems with the education process that had to do both with the understanding of the new lesson as well as applying it and transforming it into knowledge. Many of them also admit that they were unprepared for the whole situation, with the majority of them

[3] https://www.savethechildren.net/news/children-have-lost-more-third-their-school-year-pandemic, retrieved 30/08/2022
[4] https://www.savethechildren.org.uk/news/media-centre/press-releases/Savethechildrenreportglobaleducationemergency, retrieved 30/08/2022

recognizing the imperative need for their training on digital platforms, as they contribute greatly to the future success of students and should be properly prepared to meet this important task. Therefore, they must be equipped with the necessary knowledge through seminars as well as the necessary technology in the learning process [10].

The need for teacher training in remote teaching techniques has become also evident from a survey conducted by the non-profit organization Socialinnov[5], which conducted a survey by sending teachers the same questionnaire before and after the outbreak of Covid-19 and the extended use of online teaching. According to the survey's findings, teachers chose as the most important benefits of technology for their school, firstly the improvement of the way that the information was managed in their school, secondly the improvement of the overall educational experience as well as the learning outcome and thirdly the better access to knowledge. At the same time, 87.38% of the participants have stated that they are positive about the possibility of adopting synchronous and asynchronous distance teaching practices for all, or for specific courses, or in cases where there is an inability presented to learn live, but it acknowledged, in a percentage of 98.19 % that there appears an imperative need to train all the teachers through the procedure and all the necessary platforms and use of equipment[6].

4. The future of education.

As long as the future of education is concerned, the scenarios are many, but none of them sound that likely. Most of the scenarios present a mix of physical and virtual classrooms, which will allow children that come from remote areas or live in conditions that do not allow them to be transported to school to be a part of their classroom through remote teaching and there are researchers that present the use of telerobotics, meaning robotic devices that represent the students in class [11]; [12]; [13], while the fanatical users of technology imagine virtual classrooms with VR or virtual worlds [14]; [15].

Other researchers and specialties in the education area state that remote teaching can be adjunctive, but cannot be the main form of teaching, as children need to socialize, they need interaction, communication and personal contact with the teacher and that can only be provided in a physical classroom and not a virtual one. The future of education can be a mix of the two forms of teaching that will enable the teachers to teach by showing and experimenting and that can be cooperated by electronic means. Books must remain a crucial educational tool but tablets are welcomed too in the educational process. Through the combination of physical and virtual teaching, students will create new knowledge by being creative. In this teaching reality, the teacher will occupy a different role and will not be a so-called "authority" but a "mediator", through interaction. New technology such as AR and VR and also the use of AI in the educational process, specialized courses and new specializations related to technology, robotics and STEM, in addition, can become a crucial means of education and there appears to be an interest in these technologies in the education process in the coming years. However, the infrastructures of school units must be upgraded to support these developments and to give students the possibility of using technology in their schools and there appear to be four critical elements on which the future school will be built. In particular, the future school must promote solutions to the pupils, that are easy to use and to secure their flawless operation and most importantly availability to all, without restrictions [16].

It is certain that the entire educational community is looking forward to getting back to normality with the students not only back at their classrooms but with no fear as well, but during the time of crisis certain acts have been made and teachers have experimented with technology and discovered possibilities they could not previously imagine. In this new reality, technology has seemed to empower teachers and has given them the opportunity to create flexible learning environments, which appeal to their students [17]. However, the importance of the physical presence is not questioned, as it creates the right psychology for pupils to learn and socialize, because teaching, in addition to being a science, is also a social art that has the ability to create the right climate for learning, which cannot be done through virtual reality, because teaching does not involve "showing off" or presenting one's skill but giving the pupils an equal opportunity to learning [18]. Education's role is to produce knowledge through either books or digital content, both of which are capable of leveraging the skills and knowledge [19]; [20].

[5] https://techtalentschool.gr/research/digital-transformation-in-education-report/, retrieved 30/08/2022
[6] https://techtalentschool.gr/wp-content/uploads/2022/08/Socialinnov_Digital_Transformation_In_Education.pdf, retrieved 30/08/2022

Covid-19 has offered a great opportunity for education to be reformed, by enhancing it with forward-looking systems that provide quality education for all students. In order to achieve this, education must invest in digital literacy and digital infrastructure and make a shift towards learning the ways a pupil needs to accomplish in order to achieve information, revitalization of lifelong learning and create strong links between formal and non-formal education. Education must leverage flexible methods, digital technologies and modernized curricula while ensuring continuous growth for teachers and communities. And last but not least, education must prevent and extinguish inequalities, in order to create an inclusive, resilient, quality learning system that is fit for the future [21].

6. Conclusions.

In a world that is changing rapidly and experiencing constant crises, that are associated with various causes, such as pandemics, economic crises, wars and natural disasters measures must be taken to prevent sudden changes in social life that can interrupt the normality of the educational process. Remote teaching was a solution to Covid-19 in order to protect the health of the pupils, the teachers and the members of the university community. Although there have been many obstacles to the educational procedure, the challenges posed by strengthening its integration of technology in education can be seen as an opportunity for reforming traditional educational roles and practices. The shift to remote teaching was not the result of a strategic choice of universities and schools in general, but it arose as a necessity to respond to problems posed by the pandemic crisis.

Of course, at first remote teaching was faced with skepticism but as it became clear, digital education does not abolish the communication between the teacher and the pupil and it can promote sociability. Although, it has been clear that it does not allow the creation of a holistic sense of shared experience as it happens in the physical class, where pupils and teachers share the experience of an academic community in the classroom. Education must evaluate the special experience of remote teaching and online education by embedding and contextualizing these practices of a critical pedagogical conception of the role of technology in school learning.

Undoubtedly, technological developments provide significant opportunities for innovation and creative practices in the educational process. Technology is a powerful tool to use which has important consequences in our pedagogical practices but it must be used with caution. Technology can be used in new learning models that can contribute to the forming of new communication techniques and an “open” learning procedure, which contributes to social forms emancipation and educational communities inside or outside the traditional means of education.

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