Research Article

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# Comparing Emergency Remote Learning with Traditional Learning in Primary Education: Primary School Student Perspectives

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**Abstract:** This study aims to explore primary school students' perspectives of emergency remote teaching and learning during the COVID-19 pandemic and their preferences when comparing it with face-to-face learning. Data from 114 Greek primary students showed that students did not find online learning particularly intriguing, enjoyable, and interactive and felt social isolation due to the lack of communication and interactions. Most students preferred traditional learning to online learning as they found it more enjoyable and interactive, and made it easier to learn, focus on, comprehend, and perform better. They greatly valued the class atmosphere and the ability to actively participate and freely communicate, and stated that it was easier to devote time to studying, complete their assignments, and get answers to their question when learning in person. Students believed that despite its disadvantages, online learning might be more broadly used in the future. Finally, no significant differences were found regarding students' gender, age, and class level.

**Keywords:** online learning, emergency remote teaching, education, COVID-19 pandemic, distance education, technology-enhanced learning

## 1 Introduction

The rapid and global spread of the coronavirus disease (COVID-19) has drastically affected the whole world. On the March 11, 2020, the World Health Organization (WHO) declared COVID-19 as a pandemic (World Health Organization, 2020). Almost all sectors were affected. The educational sector and community were no exception to that as they were tremendously affected by the severe pandemic with educational institutes in 195 countries being suspended in mid-April 2020 (UNESCO, 2020). Teachers, students, parents, and the education community as a whole had to adjust to the new challenges and conditions, find ways to meet the new needs and requirements, and overcome the unexpected and unprecedented difficulties. With the educational process having to rapidly switch from traditional face-to-face to distance learning through virtual learning environments not only many challenges but also many opportunities arose (Ferri, Grifoni, & Guzzo, 2020).

Students' ability to continue their education in times of emergency is crucial. This is the reason why teachers had to cultivate a new skill set and adapt their didactic methods and pedagogical approaches by adopting emergency remote teaching during the pandemic (Abaci, Robertson, Linklater, & McNeill, 2020; Lampropoulos, Siakas, & Anastasiadis, 2021; Whalen, 2020). More specifically, emergency remote teaching is an unplanned, rapid, and temporary transformation of the teaching process due to extraordinary and urgent circumstances whose main aim is to offer temporary access to instructional support and not to re-create a stable educational ecosystem (Hodges, Moore, Lockee, Trust, & Bond, 2020). It is worth noting that the element of distance in emergency remote teaching and learning refers exclusively to spatial distance (Bozkurt & Sharma, 2020). As carefully designed online learning experiences differ significantly compared to courses offered simply online to cope with a sudden emergency, there is a clear difference between conventional distance education and emergency remote teaching and learning (Williamson, Eynon, & Potter, 2020). In both cases, the instructional design models should include responsive, iterative, interactive, reflective, breadth-first, and top-down characteristics and ensure online security and privacy (Kanakaris, Lampropoulos, & Siakas, 2019; Karakaya, 2020).

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Capturing and comprehending the opinions of involved stakeholders is essential to successfully cope with similar situations that might arise. Due to their young age and the lack of day-to-day experiences, primary school students were drastically affected by the changes made to their way of learning, communicating with their peers, and going through significant for their development of social experiences (Bond, 2020). Similarly, the parents of these children were also influenced by these changes (Misirli & Ergulec, 2021). Many of the experiences faced by both children and parents might have consequences in the future. Consequently, the aim of this study is to comprehend primary school students' viewpoints and perceptions of their emergency remote teaching and their learning experiences and preferences compared with traditional face-to-face learning.

## 2 Related work

Several studies have been carried out trying to better assess the impact of emergency remote teaching in education. In this view, emphasis has been put on comprehending the viewpoints of the public as well as of parents, teachers, and students of primary education.

Regarding primary education, Alkinani (2021) conducted a study involving Saudi Arabian students, parents, and teachers. The findings showed that although students received support from their teachers, parents, and schools and were comfortable with distance learning, they still believed that it could not replace traditional learning. Furthermore, teachers had difficulty in preparing their material due to their lack of training and knowledge in online classes. Parents expressed negative attitudes towards distance education while stating that they preferred face-to-face learning. Ewing and Cooper (2021) examined the viewpoints of Australian teachers, students, and parents. Based on their results, there was a clear lack of social interaction, parents were unengaged with teachers, and students regarded distance learning as challenging and less personalized when compared to traditional learning.

Furthermore, in the context of primary education, Seabra, Abelha, Teixeira, and Aires (2021) analyzed Portuguese parents' viewpoints. Parents were moderately satisfied with emergency remote teaching and believed that their workload increased. Additionally, the need to promote and increase parents' digital literacy was highlighted. Misirli and Ergulec (2021) examined Turkish parents' perspectives and concluded that although students cultivated their self-regulated learning skills, emergency remote teaching was unsuitable for young students and students with special needs. It was also evident that parents deprecated the lack of opportunities to socialize and interact and the increased time spent on digital screens. Lau and Lee (2020) explored Chinese parents' viewpoints. According to their findings, students needed help to carry out their tasks as they experienced several difficulties including lack of learning interests and limitations in their home environment. Moreover, parents were dissatisfied with their children's overall learning experience and support from school. Daniela, Rubene, and Rūdolfa (2021) and Haller and Novita (2021) conducted studies regarding Latvian parents' perspectives. Based on the findings, parents tried their best to support their children as their involvement was necessary. Therefore, parents' digital literacy skills and digital competence were essential for students' effective online learning experience. Hikmah, Wuryandani, Zubaidah, Herwin, and Jhon (2021) examined Indonesian teachers' opinions. Based on their results, teachers came up with several difficulties concerning the preparation, conduction, and evaluation of the learning activities. Despite this fact, they tried to use several learning platforms and media and implement various educational strategies. Finally, teachers highlighted that communication and collaboration were key parts of online lessons. Polydoros and Alasona (2021) analyzed Greek teachers' viewpoints. The need for teachers to be trained in using digital technologies and the necessity for implementing proper teaching methodologies were highlighted. Redmond, Smart, Powell, and Albion (2021) examined the confidence level of primary education teachers regarding their ability to implement digital technologies in the curriculum. Based on their findings, although teachers did not have particularly deep knowledge of key curriculum constructs and digital and technical skills of high level, they were able to and confident of performing low-level tasks. The need to provide teachers with access to high-quality learning resources and material and opportunities to train and develop their digital skills and knowledge was evident.

In the case of K-12 education, Potyrała, Demeshkant, Czerwiec, Jancarz-Łanczkowska, and Tomczyk (2021) examined primary and secondary Polish head teachers' perspectives. Based on their results, students, parents, and teachers can cultivate digital skills through online learning. Moreover, despite the clear lack of standards for quality and control, specific educational goals can be met. Several positive and negative effects deriving from emergency remote teaching were highlighted. Topkaya, Benli, and Cerev (2021) carried out a study focusing on Kenyan parents' experiences. According to their findings, mostly due to technical difficulties and lack of digital equipment, most learners did not benefit from online learning. This fact amplified the educational inequality. Limited student participation and parents' supervision and guidance were also observed.

Scarpellini et al. (2021) conducted a study involving Italian parents of primary and secondary school students. Based on the parents' viewpoints, distance education was negatively viewed due to its nature and the fact that it increased deprivation and social inequalities. Routines became unstable, lessons less organized and learning quality lower and students showed restlessness, aggressiveness, and lack of focus and enthusiasm. Abuhammad (2020) examined Jordanian parents' opinions by analyzing Facebook groups. According to the results, although parents tried to actively assist their children in coping with online learning, several personal, technical, financial and logistical barriers and issues arose. Simpson (2020) analyzed the viewpoints of students (of 4th–12th grades) and parents in the United States. Various teaching methods were applied having different success results. Communication was defined as a significant factor while the need for more personalized and increased feedback and support was highlighted.

Moreover, Takacs and Pogatsnik (2021) studied the viewpoints of Hungarian students in K-12 settings. The monotonous nature of online learning, the lack of daily personal contact with peers and teachers as well as social isolation in general were proven to be the main disadvantages of online learning. Tomasik, Helbling, and Moser (2021) examined Swiss primary and secondary students' opinions. Although distance learning was viewed as an effective educational tool in emergency situations and did not affect the learning gains of secondary education students, primary education pupils faced difficulties which resulted in their learning being slowed down and learning discrepancies being increased. An et al. (2021) looked into the feelings, experiences, and perspectives of teachers during the early stages of the pandemic. In particular, the main challenges identified were students' lack of engagement and active participation, parental support, access to technology, students' well-being, lack of interactions, and work–life balance. The necessity for increased technology training and access, online learning development, and communication and access plans to be better prepared for the future was evident. Bergdahl and Nouri (2020) analyzed Swedish teachers' experience regarding the transition to distance education. Their findings showed that schools focused mainly on technical issues and that there was a clear lack of appropriate pedagogical approaches being used. In addition, video-based communication, student interaction and communication, distribution and sharing learning material and exercises as well as examination and assessment were highlighted as the main pedagogical activities that took place during emergency distance education. Aykan and Yıldırım (2021) investigated the views of Turkish teachers concerning the integration of a lesson study model in distance education. Based on the results, the use of the lesson study model positively affected the pedagogy and content knowledge in the educational process and led to higher quality teaching and lesson planning while effective time management, environmental conditions, and lack of experience and knowledge were the main challenges faced.

Košir et al. (2020) examined the experiences of Slovenian K-12 teachers and counselors regarding online education during the COVID-19 pandemic. According to the results, the participants who were more accustomed to using ICT were more positively disposed to distance education and experienced less stress. Despite this fact, high stress levels were noticed by the participants who were also taking care of their own young children during the school closure. Ninković, Ninković, Lazarević, and Adamov (2021) explored the relationship between ICT self-efficacy and perception of online learning and assessment of Serbian K-12 teachers. Although teacher self-efficacy was not a predictor for the instructional strategies used, it greatly influenced their views of online learning and the engagement of their students. Letzel, Pozas, and Schneider (2020) explored German teachers', parents', and students' experiences and perspectives regarding homeschooling during the pandemic. Based on their results, this experience did affect not only the educational domain, but also the social and psychological states of the involved stakeholders. The need for inclusive education and equal opportunities in online learning environments was highlighted. Escola, Lopes, Catarino, and Aires (2022) examined Portuguese teachers' viewpoints regarding the integration of Microsoft 365 as an educational tool to assist online learning during the pandemic. According to the findings, teachers were familiar with using this tool, and they stated that they found it satisfactory and appropriate to use. The need to integrate digital tools to facilitate the educational process during distance education was pointed out. Csachová and Jurečková (2020) went over Slovenian teachers' experience and opinions of distance education. Teacher and school preparedness to adapt their practices and transition to online learning varied topically. Most teachers positively viewed this transition and were willing to adapt their practices and integrate different digital tools to improve their teaching quality. The key role that parents played in children's education was highlighted.

As can be seen, the overall online learning experience varies from country to country and greatly depends on the context, the prior experiences, and whose perspectives are being taken into consideration (Pokhrel & Chhetri, 2021). Particularly, the studies examined showcased that parents' and teachers' roles and digital literacy skills greatly affected the successful adoption of online learning and students'

overall learning experience (Daniela et al., 2021; Haller & Novita, 2021; Hikmah et al., 2021). Lack of motivation, of equipment, of personalized experiences and of daily personal contact and interactions as well as increased technical issues, deprivation, social inequalities and social isolation, were some of the barriers and drawbacks that were observed (Abuhammad, 2020; Ewing & Cooper, 2021; Lau & Lee, 2020; Scarpellini et al., 2021; Takacs & Pogatsnik, 2021; Topkaya et al., 2021). Students greatly preferred traditional learning to online learning as it was more familiar and suitable for them (Alkinani, 2021; Misirli & Ergulec, 2021; Seabra et al., 2021). Despite the drawbacks of online learning, there are several merits that can be yielded when properly integrated and used as a supportive tool to the existing educational methodologies (Capone & Lepore, 2021; Potyrała et al., 2021). Therefore, teachers, parents, and students should be provided with the necessary training to cultivate their digital skills and familiarize themselves with the modalities of online learning (Polydoros & Alasona, 2021).

As primary education students were drastically affected by this abrupt transition and since most of them did not have similar prior experience with online learning, it is crucial to understand their perspectives. To this end, Bond (2020) highlighted the need to expand the research into primary education. Since most studies put emphasis solely on viewpoints regarding the effectiveness of online learning during the pandemic, little is known concerning students' perspectives and preferred ways of learning, after having experienced both distance learning and traditional face-to-face learning. Presenting the experiences and viewpoints of students from different countries and backgrounds is vital to comprehend the impact of online learning and to adjust and prepare for potentially similar future emergency situations. In the case of Greece, although there are studies that focus on primary education, these studies involve kindergarten pupils (Foti, 2020), teachers (Chalari & Charonitis, 2022; Polydoros & Alasona, 2021; Tzafilkou, Perifanou, & Economides, 2022), and principals (Gkoros & Bratitsis, 2022). As a result, there is a clear lack of studies focusing on Greek primary education students.

Consequently, comprehending Greek primary school students' viewpoints and perceptions of their emergency remote teaching and their learning experiences as well as their preferences compared with traditional face-to-face learning is the main aim of this study. For that reason, a 28-item paper-based questionnaire was developed and distributed to students to complete while in the classroom. The following two Research Questions (RQ) were set to be explored:

1. RQ1: What were Greek primary school students' opinions regarding the emergency remote teaching and learning experience during the COVID-19 pandemic?
2. RQ2: What were Greek primary school students' perspectives concerning emergency remote teaching and learning compared to traditional face-to-face learning?

# 3 Methods

This study followed a quantitative research approach and used an ad hoc paper-based questionnaire to retrieve students' opinions regarding their emergency distance learning experiences. This particular approach and such instruments were used in the majority of similar studies (Khan, 2021; Pokhrel & Chhetri, 2021). The questionnaire used and the study in general did not pose any physical or psychological risks of the participants. No personal details were recorded, the students gave their consent, and only anonymized perceptions were used and analyzed. Besides students, all education stakeholders (e.g., principal, teachers, and parents) also gave their consent prior to the conduct of the study. A total of 114 students from a public primary school in Thessaloniki, Greece, participated in the study by completing the questionnaire anonymously. The participants involved were 57 female and 57 male students whose mean age was 10.7 and who were from the fourth, fifth, and sixth grades. The detailed distribution of the students based on their gender and grade is displayed in Figure 1.

Since the target group of this study involved young students, a paper-based questionnaire was selected over an online one. Another reason for the paper-based questionnaire selection was to ensure that it would be filled in by the students themselves and not by somebody else (e.g., parents, guardians, etc.). The instrument developed consisted of 28 items that assessed students' viewpoints and perceptions. Particularly, closed-ended questions were used in addition to Likert scale questions based on a scale from 1 (Strongly disagree) to 5 (Strongly Agree). The items will be presented as part of the results section. Due to the age of the participants, simple vocabulary and comprehensible concepts were used.

To facilitate the data acquisition process as well as students' completion of the questionnaire, the same experienced educator, who was not the main teacher of the participating classes, was present in each classroom along with one of the researchers and presented each question while explaining possible unknown words to the students and answering their questions. To facilitate the educator's role and ensure the understanding of the more complicated terms by the students, slides for the more complex terms were prepared for the educator to show in case explaining them verbally was not effective. It is worth noting that the slides were presented in the students'

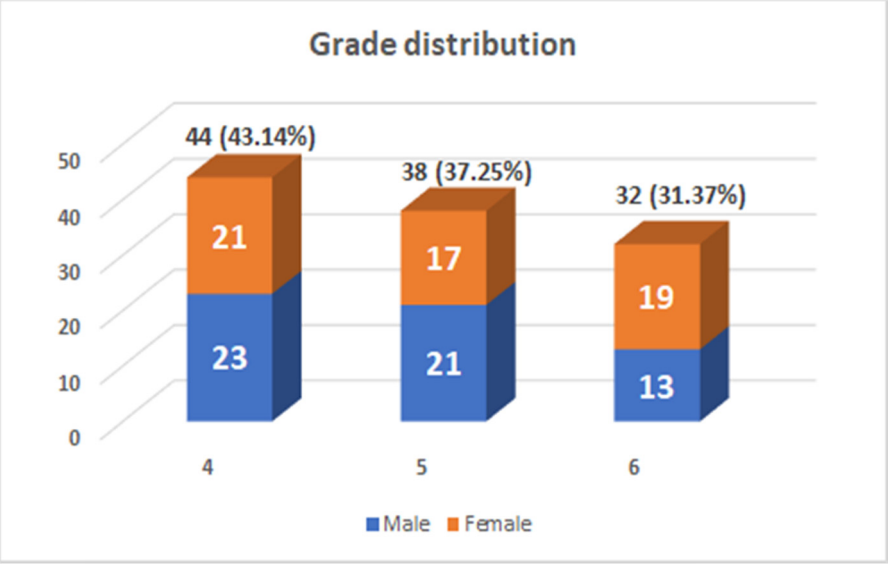


**Figure 1:** Students' grade and gender distribution.

native language using simple terms, definitions, examples, and images. Due to the COVID-19 protocols and safety measures, the students of each class were divided into smaller groups and the process was the same for all groups and carried out by the same educator. In addition to the efforts of the educator, the questions were easy to understand and answer, and this is justified by the fact that all the respondents provided valid answers to all the questions. It is worth noting that the data acquisition process was conducted approximately one and a half years after emergency distance learning was introduced and students were back in their classrooms. The particular time period meant that students had already acquired quite enough experience in online learning while also having experienced traditional face-to-face learning before and after the lockdown. Therefore, they were able to compare and contrast their learning experiences. In order to analyze the quantitative data, the Statistical Package for the Social Sciences statistical software suite was used to conduct descriptive statistics analysis.

## 4 Results

As can be seen in Table 1, most students (55.3%) had mixed feelings regarding emergency remote teaching and learning experience, and most students (72.8%) missed their classmates and their social interactions and communication a lot.

To assess students' experience regarding online learning during the pandemic, several simple questions were administered. These questions followed a Likert scale from 1 (Strongly disagree) to 5 (Strongly Agree). Table 2 presents the results which are further explained in Figure 2. Specifically, Figure 2 uses diverging stacked bars to visualize the distribution of the responses to each question based on the Likert scale (Strongly disagree to Strongly agree) using the frequency and percentage of the related responses and the mean Liker scale value as the distribution reference point. The majority of students agreed that online learning helps save time (52.7%) and assists in developing digital skills (44.7%), whereas it requires more concentration (60.5%), gets affected by technical issues and difficulties (77.2%), gets affected by the prevailing home conditions (54.5%), and leads to social isolation (56.2%). The majority of students were neutral regarding the interactive (36%) and intriguing (29.8%) nature of online learning and the potential it offers students to learn at their own pace (33.3%). Finally, the majority of

**Table 1:** Students' viewpoints regarding their online learning experience and social interactions

| Question | Not at all | | A little | | A lot | |
|---|---|---|---|---|---|---|
| | freq. | pct. | freq. | pct. | freq. | pct. |
| Did you like the experience of online learning? | 31 | 27.2% | 63 | 55.3% | 20 | 17.5% |
| Did you miss interacting with your classmates during the period of online learning? | 6 | 5.3% | 25 | 21.9% | 83 | 72.8% |

**Table 2:** Students' viewpoints regarding online learning

| Statement | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|---|---|---|---|---|---|
| | freq. (pct.) | freq. (pct.) | freq. (pct.) | freq. (pct.) | freq. (pct.) |
| [...] requires more concentration | 14 (12.3%) | 17 (14.9%) | 14 (12.3%) | 43 (37.7%) | 26 (22.8%) |
| [...] is interactive | 19 (16.7%) | 22 (19.3%) | 41 (36.0%) | 26 (22.8%) | 6 (5.3%) |
| [...] is interesting | 21 (18.4%) | 23 (20.2%) | 34 (29.8%) | 26 (22.8%) | 10 (8.8%) |
| [...] is enjoyable | 30 (26.3%) | 34 (29.8) | 24 (21.1%) | 19 (16.7%) | 7 (6.1%) |
| [...] gets affected by technical issues | 3 (2.6%) | 9 (7.9%) | 14 (12.3%) | 46 (40.4%) | 42 (36.8%) |
| [...] helps save time | 15 (13.2%) | 12 (10.5%) | 27 (23.7%) | 46 (40.4%) | 14 (12.3%) |
| [...] causes social isolation | 11 (9.6%) | 14 (12.3%) | 25 (21.9%) | 36 (31.6%) | 28 (24.6%) |
| [...] gets affected by the prevailing home conditions | 8 (7.0%) | 18 (15.8%) | 26 (22.8%) | 41 (36.0%) | 21 (18.4%) |
| [...] allows students to learn at their own pace | 13 (11.4%) | 35 (30.7%) | 38 (33.3%) | 24 (21.1%) | 4 (3.5%) |
| [...] assists in developing digital skills | 9 (7.9%) | 21 (18.4%) | 33 (28.9%) | 38 | 13 (11.4%) |

students did not enjoy the overall online learning experience (56.1%).

Furthermore, students were asked to select whether they prefer traditional face-to-face learning to online learning through several statements. Table 3 and Figure 3 depict students' related answers. The overwhelming majority of students preferred traditional learning as it enables them to learn (98.2%) and perform better (90.4%), complete assignments more easily (72.8%), participate more actively (92.1%), concentrate better (87.7%), dedicate more time to studying (79.8%), communicate with teachers (91.2%) and classmates (86.8%) better, and get answers to their questions more easily (94.7%). Moreover, students consider lessons that take place in the classroom to have a better atmosphere (88.6%) and to be more easily comprehensible (96.5%), more enjoyable (87.7%), and more interactive (80.7%). Finally, the vast majority of students find it more difficult to pay attention to lessons that take place online (85.1%).

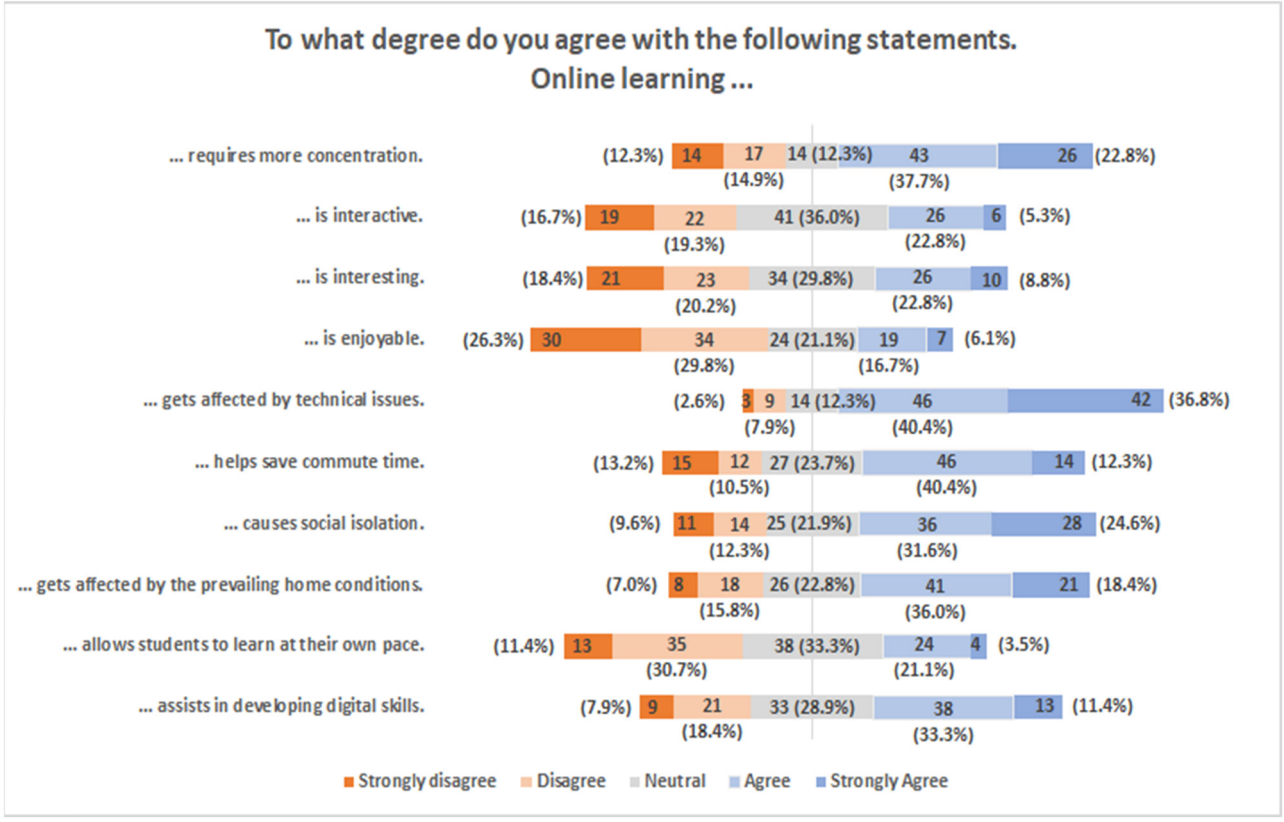


**Figure 2:** Students' viewpoints regarding online learning with the frequency and percentage of each point of the Likert scale response.

**Table 3:** Students' preference regarding in class or online learning

| Statement | School | | Online learning | |
|---|---|---|---|---|
| | freq. | pct. | freq. | pct. |
| I perform better at/on [...] | 103 | 90.40% | 11 | 9.60% |
| I complete my assignments more easily at/on [...] | 83 | 72.80% | 31 | 27.20% |
| I participate more actively in the lesson at/on [...] | 105 | 92.10% | 9 | 7.90% |
| I concentrate better at/on [...] | 100 | 87.70% | 14 | 12.30% |
| I dedicate more time to studying at/on [...] | 91 | 79.80% | 23 | 20.20% |
| I communicate with my teachers better at/on [...] | 104 | 91.20% | 10 | 8.80% |
| I find it more difficult to pay attention to my lessons at/on [...] | 17 | 14.90% | 97 | 85.10% |
| I communicate with my classmates better at/on [...] | 99 | 86.80% | 15 | 13.20% |
| My questions are answered more easily at/on [...] | 108 | 94.70% | 6 | 5.30% |
| I feel the class atmosphere better at/on [...] | 101 | 88.60% | 13 | 11.40% |
| Lessons are more easily comprehensible at/on [...] | 110 | 96.50% | 4 | 3.50% |
| Lessons are more enjoyable at/on [...] | 100 | 87.70% | 14 | 12.30% |
| Lessons are more interactive at/on [...] | 92 | 80.70% | 22 | 19.30% |
| I learn better at/on [...] | 112 | 98.20% | 2 | 1.80% |

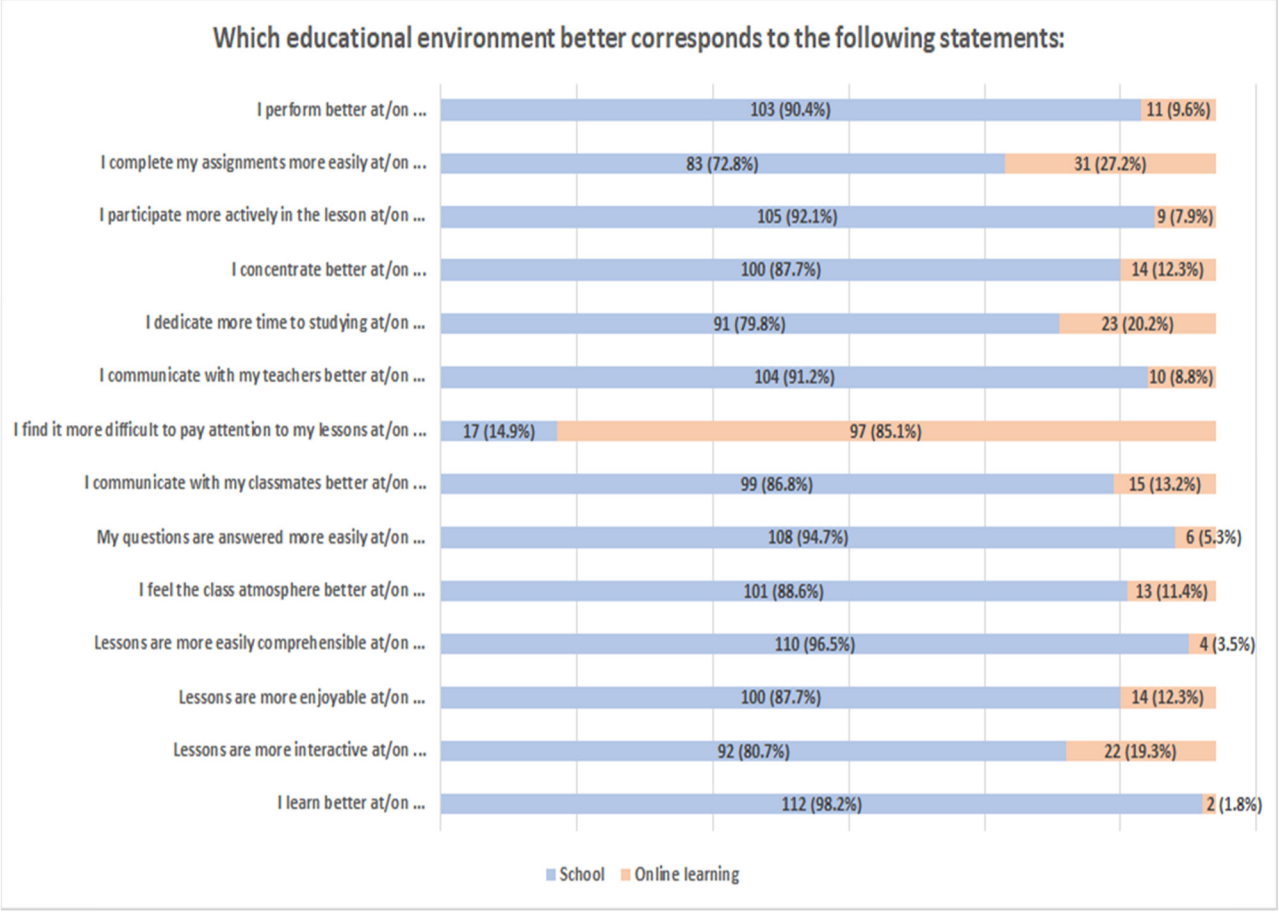


**Figure 3:** Students' preference regarding in-class or online learning.

**Table 4:** Students' preferred learning environment

| Question | Face-to-face learning | | Online learning | | Blended learning | |
|---|---|---|---|---|---|---|
| | freq. | pct. | freq. | pct. | freq. | pct. |
| Which kind of learning environments do you prefer? | 99 | 86.8% | 4 | 3.5% | 11 | 9.6% |

When asked about their preferred learning environment after having experienced both face-to-face and online learning, the vast majority of students selected face-to-face learning (86.8%), followed by blended learning (9.6%) and online learning (3.5%) as can be seen in Table 4. Finally, as presented in Table 5, students mostly agreed (32.5%) or were neutral (30.7%) that online learning will be more widely used in primary education in the future.

## 5 Discussion

Education is an integral part of one's life and development and this is particularly true for young children. Therefore, being able to provide education of high quality even during emergency situations, such as the COVID-19 pandemic, is essential. The education community tried to address the several challenges and difficulties that arose during the pandemic by rapidly transitioning from face-to-face to online learning. Nonetheless, the effectiveness of emergency remote teaching and learning activities varied greatly between countries, schools, and even different classrooms of the same school (Pokhrel & Chhetri, 2021). It is worth noting that the emergency integration of online learning at schools is not equivalent to the purposeful and organized adoption of online learning and technologies in education (Ewing & Cooper, 2021).

The results obtained in the present study which demonstrate the viewpoints of primary school students from a public primary school in Thessaloniki, Greece confirm and further expand those of the available literature. Particularly, no significant differences were found regarding students' gender, age, and class level. This is in contrast with other recent studies which found that students' gender might influence their perspectives (Rayhana & Al-Batayha, 2022). The majority of students had mixed feelings regarding their emergency remote teaching experience. This is in line with other studies reporting neutral (Çelik & Íşler, 2020; Rayhana & Al-Batayha, 2022), positive (Dedić, & Jokić, 2021; Zheng et al., 2022), and negative perspectives (Stojkovic & Jelic, 2021). In addition, students felt social isolation due to the lack of communication and interactions with their peers and teachers. Although positive points of online learning, such as the development of digital skills, learning at one's own pace, and saving time, were highlighted, several drawbacks, such as technical issues, home conditions, social isolation, and the need to be more focused and concentrated, were observed. Several studies that focused on primary education have reported similar results concerning the main benefits and drawbacks that arose (Çelik & Íşler, 2020; Dedić, & Jokić, 2021; Lenka, Beáta, & Radmila, 2021; Stojkovic & Jelic, 2021; Zheng et al., 2022).

When comparing students' learning experiences after having experienced both face-to-face and online learning, it was quite clear that the vast majority preferred traditional learning and did not find the overall online learning experience particularly intriguing, enjoyable, and interactive. Specifically, they regarded face-to-face learning as more joyful and interactive and the courses taught in person as easier to learn, focus on, comprehend, and perform better. They highly valued the class atmosphere, the ability to actively participate, and the ability to freely communicate with their teachers and classmates during face-to-face learning. Students also stated that it was easier for them to devote time to studying, complete their assignments, and get answers to their questions when the lessons took place in person. Students' preference for traditional

**Table 5:** Students' opinion regarding online learning in the future

| Question | Strongly disagree | | Disagree | | Neutral | | Agree | | Strongly agree | |
|---|---|---|---|---|---|---|---|---|---|---|
| | freq. | pct. | freq. | pct. | freq. | pct. | freq. | pct. | freq. | pct. |
| Do you believe that online learning will be more widely used in the future? | 12 | 10.5% | 25 | 21.9% | 35 | 30.7% | 37 | 32.5% | 5 | 4.4% |

learning over online learning and its merits have also been highlighted in recent studies (Khan, 2021; Mseleku, 2020; Pokhrel & Chhetri, 2021). Finally, students believed that despite its disadvantages, online learning when used in a student-centered manner and following a purposeful integration might be more broadly used in the future. The use of online learning as a supportive tool to the existing educational methodologies has been pointed out in the results of recent studies (Capone & Lepore, 2021; Potyrała et al., 2021). Consequently, it can be inferred that despite the shortcomings experienced during the pandemic, if the education community and policy-makers capitalize on the digital competencies cultivated and implement technological applications in a student-centered manner, technology-enhanced learning will be more widely adopted and better integrated to meet the educational needs of modern learners (Lampropoulos & Admiraal, 2023).

The fact that all the participants were from the same school in which the same teaching approaches and methods were used can be regarded as a limitation of this study. The study involving only students from grades 4 to 6 might be considered as an additional limitation. The future goals of this study involve the inclusion of more students from different schools, areas, and countries and the conduct of cross-country comparisons. Future research should aim to highlight the impact of online learning on students, teachers, and parents from different countries and backgrounds. Moreover, future research directions could include the comparison, analysis, and summary of studies related to the effect of emergency remote teaching and learning at all educational levels and in different countries.

# 6 Conclusion

The COVID-19 pandemic drastically affected the whole world. The education community had to adapt to the challenges that arose by rapidly transitioning to online learning. Due to tremendous efforts, students were able to continue their education even during such demanding times through emergency remote teaching and learning which differs from carefully designed online learning. Particularly, primary education students were greatly affected by all the changes and challenges, due to their young age and lack of day-to-day experiences.

This study displayed the perspectives of Greek primary education students regarding their online learning experience and its comparison with face-to-face-learning. According to the results, the students greatly preferred traditional learning and they believed that it cannot be replaced with online learning which they found unsuitable and unsatisfactory. More specifically, students regarded face-to-face learning as more interactive, interesting, and enjoyable and made it easier to comprehend, devote time to studying, focus on, complete their assignments, perform better, get answers to their questions, and learn. In addition, they highly valued their ability to be actively engaged in the educational process while communicating and interacting with their teachers and peers.

Despite the drawbacks that were observed, there are several benefits that can be yielded when implementing purposeful and organized online learning. Understanding what was correctly or wrongly done and what could be improved is essential to better prepare for potentially future emergency situations. This study provided the perspectives of students as an opportunity to reflect upon the practices used. Government, society, the education community, and the involved stakeholders should work together and make joint efforts to overcome the difficulties, provide education of high quality, and adopt effective teaching and learning approaches even during emergency situations.

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# References

Abaci, S., Robertson, J., Linklater, H., & McNeill, F. (2020). Supporting school teachers' rapid engagement with online education. *Educational Technology Research and Development*, *69*(1), 29–34. doi: 10.1007/s11423-020-09839-5.

Abuhammad, S. (2020). Barriers to distance learning during the COVID-19 outbreak: A qualitative review from parents' perspective. *Heliyon*, *6*(11), e05482. doi: 10.1016/j.heliyon.2020.e05482.

Alkinani, A. E. (2021). Acceptance and effectiveness of distance learning in public education in saudi arabia during Covid19 pandemic: Perspectives from students, teachers and parents. *International Journal of Computer Science and Network Security (IJCSNS)*, *21*(2), 54–65. doi: 10.22937/IJCSNS.2021.21.2.7.

An, Y., Kaplan-Rakowski, R., Yang, J., Conan, J., Kinard, W., & Daughrity, L. (2021). Examining k-12 teachers' feelings, experiences, & perspectives regarding online teaching during the early stage of the COVID-19 pandemic. *Educational Technology Research and Development*, *69*(5), 2589–2613. doi: 10.1007/s11423-021-10008-5.

Aykan, A., & Yıldırım, B. (2021). The integration of a lesson study model into distance STEM education during the COVID-19 pandemic: Teachers' views and practice. *Technology, Knowledge and Learning*, *27*(2), 609–637. doi: 10.1007/s10758-021-09564-9.

Bergdahl, N., & Nouri, J. (2020). Covid-19 and crisis-prompted distance education in Sweden. *Technology, Knowledge and Learning*, *26*(3), 443–459. doi: 10.1007/s10758-020-09470-6.

Bond, M. (2020). Schools and emergency remote education during the COVID-19 pandemic: A living rapid systematic review. *Asian Journal of Distance Education*, *15*(2), 191–247.

Bozkurt, A., & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to CoronaVirus pandemic. *Asian Journal of Distance Education*, *15*(1), 1–6. doi: 10.5281/zenodo.3778083.

Capone, R., & Lepore, M. (2021). From distance learning to integrated digital learning: A fuzzy cognitive analysis focused on engagement, motivation, & participation during COVID-19 pandemic. *Technology, Knowledge and Learning*, *27*(4), 1259–1289. doi: 10.1007/s10758-021-09571-w.

Çelik, S., & Íşler, N. (2020). Learning experiences of syrian refugee students during the outburst of Covid-19 pandemic. *Milli Eğitim Dergisi*, *49*(1), 783–800. doi: 10.37669/milliegitim.783048.

Chalari, M., & Charonitis, G. (2022). The first reactions of early childhood education schools during the early days of the COVID-19 pandemic in Greece. *Education, 3–13*, 1-13. doi: 10.1080/03004279.2022.2112733.

Csachová, L., & Jurečková, M. (2020). Mathematics teaching in Slovakia during COVID-19 quarantine season in spring of 2020. *Open Education Studies*, *2*(1), 285–294. doi: 10.1515/edu-2020-0131.

Daniela, L., Rubene, Z., & Rūdolfa, A. (2021). Parents' perspectives on remote learning in the pandemic context. *Sustainability*, *13*(7), 3640. doi: 10.3390/su13073640.

Dedić, Z. R., & Jokić, B. (2021). Croatian pupils' perspectives on remote teaching and learning during the COVID-19 pandemic. *Društvena istraživanja*, *30*(2), 227–247. doi: 10.5559/di.30.2.03.

Escola, J., Lopes, N., Catarino, P., & Aires, A. P. (2022). Microsoft 365 as a tool for teaching during the covid-19 pandemic: Perceptions of Portuguese teachers of basic and secondary education. *Open Education Studies*, *4*(1), 241–251. doi: 10.1515/edu-2022-0015.

Ewing, L.-A., & Cooper, H. B. (2021). Technology-enabled remote learning during covid-19: Perspectives of Australian teachers, students and parents. *Technology, Pedagogy and Education*, *30*(1), 41–57. doi: 10.1080/1475939x.2020.1868562.

Ferri, F., Grifoni, P., & Guzzo, T. (2020). Online learning and emergency remote teaching: Opportunities and challenges in emergency situations. *Societies*, *10*(4), 86. doi: 10.3390/soc10040086.

Foti, P. (2020). Research in distance learning in Greek kindergarten schools during the pandemic of COVID-19: Possibilities, dilemmas, limitations. *European Journal of Open Education and E-learning Studies*, *5*(1), 19–40. doi: 10.5281/zenodo.3839063.

Gkoros, D., & Bratitsis, T. (2022). E-Leadership and Distance Education in Greece during Covid-19 Pandemic. *Management in Education*. doi: 10.1177/08920206221081611.

Haller, T., & Novita, S. (2021). Parents' perceptions of school support during COVID-19: What satisfies parents?. *Frontiers in Education*, *6*, 1–15. doi: 10.3389/feduc.2021.700441.

Hikmah, A., Wuryandani, W., Zubaidah, E., Herwin, H., & Jhon, W. (2021). Online learning in primary school during covid-19 pandemic: How does it look like?. *Journal of Education Research and Evaluation*, *5*(3), 350–361. doi: 10.23887/jere.v5i3.34237.

Hodges, C. B., Moore, S., Lockee, B. B., Trust, T., & Bond, M. A. (2020). *The difference between emergency remote teaching and online learning*.

Kanakaris, V., Lampropoulos, G., & Siakas, K. (2019). A survey and a case-study regarding social media security and privacy on Greek future IT professionals. *International Journal of Human Capital and Information Technology Professionals (IJHCITP)*, *10*(1), 22–37. doi: 10.4018/IJHCITP.2019010102.

Karakaya, K. (2020). Design considerations in emergency remote teaching during the COVID-19 pandemic: A human-centered approach. *Educational Technology Research and Development*, *69*(1), 295–299. doi: 10.1007/s11423-020-09884-0.

Khan, M. A. (2021). COVID-19's impact on higher education: a rapid review of early reactive literature. *Education Sciences*, *11*(8), 421. doi: 10.3390/educsci11080421.

Košir, K., Dugonik, Š., Huskić, A., Gračner, J., Kokol, Z., & Krajnc, Ž. (2020). Predictors of perceived teachers' and school counsellors' work stress in the transition period of online education in schools during the COVID-19 pandemic. *Educational Studies*, *48*(6), 1–5. doi: 10.1080/03055698.2020.1833840.

Lampropoulos, G., & Admiraal, W. (2023). The impact of COVID-19 pandemic on primary, secondary, and K-12 education: A systematic review. *International Journal on Studies in Education (IJonSE)*, *5*(4), 348–440. doi: 10.46328/ijonse.161.

Lampropoulos, G., Siakas, K., & Anastasiadis, T. (2021). A social media data analysis study regarding the effect of the COVID-19 pandemic on online learning. *In Proceedings of BCS Quality Specialist Group's Annual 26th International Conference on Software Process Improvement – Research into Education and Training (INSPIRE)* (pp. 181–194). United Kingdom.

Lau, E. Y. H., & Lee, K. (2020). Parents' views on young children's distance learning and screen time during COVID-19 class suspension in Hong Kong. *Early Education and Development*, *32*(6), 863–880. doi: 10.1080/10409289.2020.1843925.

Lenka, T., Beáta, R., & Radmila, H. (2021). Forms and methods of online physical education instruction in slovakia from the perspective of elementary school students. *Journal of Physical Education and Sport*, *21*, 2028–2035. doi: 10.7752/jpes.2021.s3259.

Letzel, V., Pozas, M., & Schneider, C. (2020). Energetic students, stressed parents, & nervous teachers: A comprehensive exploration of inclusive homeschooling during the COVID-19 crisis. *Open Education Studies*, *2*(1), 159–170. doi: 10.1515/edu-2020-0122.

Misirli, O., & Ergulec, F. (2021). Emergency remote teaching during the COVID-19 pandemic: Parents experiences and perspectives. *Education and Information Technologies*, *26*(6), 6699–6718. doi: 10.1007/s10639-021-10520-4.

Mseleku, Z. (2020). A literature review of E-learning and E-teaching in the era of Covid-19 pandemic. *SAGE*, *57*(52), 588-597.

Ninković, S., Ninković, S. O., Lazarević, T., & Adamov, J. (2021). Serbian teachers' perceptions of online assessment during COVID-19 school closure: The role of teachers' self-efficacy. *Educational Studies*, 1–13. doi: 10.1080/03055698.2021.1960151.

Pokhrel, S., & Chhetri, R. (2021). A literature review on impact of COVID-19 pandemic on teaching and learning. *Higher Education for the Future*, *8*(1), 133–141. doi: 10.1177/23476311209834.

Polydoros, G., & Alasona, N. (2021). Using e-learning to teach science in covid-19 era at primary education level. *Journal of Research and Opinion*, *8*(6), 2964–2968. doi: 10.15520/jro.v8i6.108.

Potyrała, K., Demeshkant, N., Czerwiec, K., Jancarz-Łanczkowska, B., & Tomczyk, Ł. (2021). Head teachers' opinions on the future of school education conditioned by emergency remote teaching. *Education and Information Technologies*, *26*(6), 7451–7475. doi: 10.1007/s10639-021-10600-5.

Rayhana, M. S. Q., & Al-Batayha, S. S. A. (2022). Evaluating distance education experience in public schools in amman second directorate from students' perspectives. *Pegem Journal of Education and Instruction*, *12*(2), 1–9. doi: 10.47750/pegegog.12.02.01.

Redmond, P., Smart, V., Powell, A., & Albion, P. (2021). Primary teachers' self-assessment of their confidence in implementing digital technologies curriculum. *Educational Technology Research and Development*, *69*(5), 2895–2915. doi: 10.1007/s11423-021-10043-2.

Scarpellini, F., Segre, G., Cartabia, M., Zanetti, M., Campi, R., Clavenna, A., & Bonati, M. (2021). Distance learning in Italian primary and middle

school children during the COVID-19 pandemic: A national survey. *BMC Public Health*, *21*(1), 1–13. doi: 10.1186/s12889-021-11026-x.

Seabra, F., Abelha, M., Teixeira, A., & Aires, L. (2021). Learning in troubled times: Parents' perspectives on emergency remote teaching and learning. *Sustainability*, *14*(1), 301. doi: 10.3390/su14010301.

Simpson, J. C. (2020). Distance learning during the early stages of the COVID-19 pandemic: Examining k-12 students' and parents' experiences and perspectives. *IxD&A*, *46*, 29–46. doi: 10.55612/s-5002-046-002.

Stojkovic, I., & Jelic, M. (2021). Pupils' attitudes toward distance education during the COVID-19 pandemic. *Zbornik Instituta Za Pedagoska Istrazivanja*, *53*(2), 239–259. doi: 10.2298/zipi2102239s.

Takacs, J. M., & Pogatsnik, M. (2021). The online learning from the students' perspective. *2021 IEEE 19th World Symposium on Applied Machine Intelligence and Informatics (SAMI)*. doi: 10.1109/sami50585.2021.9378665.

Tomasik, M. J., Helbling, L. A., & Moser, U. (2021). Educational gains of in-person vs. Distance learning in primary and secondary schools: A natural experiment during the COVID-19 pandemic school closures in Switzerland. *International Journal of Psychology*, *56*(4), 566–576. doi: 10.1002/ijop.12728.

Topkaya, Ö., Benli, A., & Cerev, G. (2021). Online distance learning during covid-19 pandemic: An empirical analysis over the students' opinions. *Journal of Economy Culture and Society*, *64*, 207–231. doi: 10.26650/JECS2021-862821.

Tzafilkou, K., Perifanou, M., & Economides, A. A. (2022). Socio-emotional characteristics of emergency distance teaching: A mixed-method investigation in Greece. *Journal of Information Technology Education: Research*, *21*, 53–73. doi: 10.28945/4918.

UNESCO. (2020). *1.3 billion learners are still affected by school or UNIVERSITY closures, as educational institutions start reopening around the world, SAYS UNESCO*. https://en.unesco.org/news/13-billion-learners-are-still-affected-school-university-closures-educational-institutions

Whalen, J. (2020). Should teachers be trained in emergency remote teaching? Lessons learned from the COVID-19 pandemic. *Journal of Technology and Teacher Education*, *28*(2), 189–199.

Williamson, B., Eynon, R., & Potter, J. (2020). Pandemic politics, pedagogies and practices: Digital technologies and distance education during the coronavirus emergency. *Learning, Media and Technology*, *45*(2), 107–114. doi: 10.1080/17439884.2020.1761641.

World Health Organization. (2020). *WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020*. https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19—11-march-2020

Zheng, X., Zhang, D., Lau, E. N. S., Xu, Z., Zhang, Z., Mo, P. K. H., … Wong, S. Y. S. (2022). Primary school students' online learning during coronavirus disease 2019: Factors associated with satisfaction, perceived effectiveness, and preference. *Frontiers in Psychology*, *13*, 1–11. doi: 10.3389/fpsyg.2022.784826.