Eğitim Felsefesi ve Sosyolojisi Dergisi
Journal of Educational Philosophy and Sociology 2024, Vol. 5 (2), 124-148
https://doi.org/10.29329/jeps.2024.1105.3

Original article

Primary Evaluation of Mathematics Lessons in Primary School Distance Education Processes

Tuğçe Değirmenci [a, *] & Yasemin Deringöl [a]

[a] Hasan Ali Yucel Faculty of Education, Istanbul University Cerrahpasa, Istanbul, Türkiye

Abstract

The aim of this study, together with the changes in education that occurred during the Covid-19 pandemic process that affected the whole world, is to examine the effects of distance education at the primary school level on teacher candidates, parents of primary school students and teacher candidates and the effects of these processes on students' learning and development in mathematics classes. Studying is a qualitative and phenomenological study. The phenomenon of the study is "distance education". The study group consists of 32 classroom teachers, 77 parents of primary school students, 95 primary school students and 75 classroom teacher candidates. Data was collected via Google Forms and content analysis was performed on the obtained data. As a result of the research, it was determined that primary school students could not get the expected efficiency due to reasons such as their attention being distracted in a short time, not being able to establish an emotional bond with their teachers and the school not being physically present. Suggestions to increase the efficiency of distance education are presented in the light of the findings since primary school students are young and attach importance to physical conditions.

Keywords: Distance Learning, Primary School, Covid-19, Mathematic Teaching, Mathematics.

Received: 27 March 2024 * **Accepted:** 20 June 2024 * **DOI:** https://doi.org/10.29329/jeps.2024.1105.3

* **Corresponding author:**

Tuğçe Değirmenci, Hasan Ali Yucel Faculty of Education, Istanbul University Cerrahpasa, Istanbul, Türkiye.
Email: tugce.degirmenci08@gmail.com

INTRODUCTION

Education is defined as making the desired change in the behavior of individuals for a specific purpose (Okan, 1983). Individuals' intrinsic motivation and full participation in the educational process have a great impact on learning. Social and global developments and changes have been experienced with individuals affecting the process. Digitalization is a part of today's society; the daily lives of adults and children have formed by various digital tools and services. (Digitalisation Commission,2015). The differentiation of the education creating the qualified labor force with the lifestyle renewed with the impact of the technology or global changes enhanced the integration of the technology in education and the concept of educational technologies (Yıldırım, 2000). The argument that uses of technology in education positively contributes to the learning process of the students have supported in various studies (Tanaçan, 1994; Genel, 1998; Aktümen & Kaçar, 2003; Karalar, 2006; Moore, 2008; Birgün et al., 2008).

When the use of technology in distance education processes improving the education positively has considered, Doğdu & Arslan (1993) state that there are three conditions in the implementation of education technologies; these are the coherence between the sufficient number of qualified and competent teachers who have a good level of knowledge in theory of educational technology, principle, method and technique, the number of students and technological devices and absence of qualification in educational tools (Yıldırım & Kete, 2002). Maths, stated as numerical thinking and problem-solving among the branches that exist in all the educational processes in today's age bridging the technology and education, has significant in education processes of especially primary school students.

In the studies in literature, it has been observed that use of mathematical literacy and information technologies while educating people to gain mathematical knowledge and basic skills greatly support the maths education in technological era we are in (Ersoy, 2001; Öner, 2009; Bal&Bedir, 2020; Gencer et al., 2018). While all these technological developments had taken place, education has suspended in many countries around the world in order to prevent the spread of the global epidemic Covid-19 and reduce social distance; According to UNESCO's (2020) report, the education of more than 1.5 billion students and 63 million educators in 191 countries was affected. Under these conditions, education, one of the core activities of millions of students, teachers and parents around the world, has been greatly affected (ETF, 2020; Hopegood; 2020; OECD, 2020; Saavedra, 2020; UNESCO, 2020).

As a result of this obligatory closure in educational institutions, the institutions have tried to continue the education through virtual means as a solution for this process. (Dawadi et al., 2020; ETF, 2020; Reimers & Scleicher, 2020). The governments have designed virtual classes through radios or TVs and tried to encourage the teachers to continue education (Pandit, 2020). China called the on-going education process as "School's Out, Class On" and carried out various activities to continue the process with the support of teachers, students and parents (Zhou et.al., 2020).

In Turkey, the process has managed with a decision related to the closure of the schools and adopting distance education as well. During the distance education process, all secondary school, high school, university, bachelor and graduate educational processes but mainly pre-school education continued in an online system through various means. With greatest cooperation, MEB (Ministry of Education) and TRT (Turkish Radio Association) prepared the distance education materials in a very short time through National channels and infrastructure of Education Information Network (EBA), providing service as a digital education platform since 2011 were strengthened and a cooperation was made with Turkish Radio Association (TRT) (Baysal et al., 2020).

To cope with the negative psychological side effects of Covid 19, a psycho-social support system, comprised of MEB, support line and counselor, have established (Özer, 2020). The system have called EBA provides educational activities for all grade categories, from pre-school education to the 12th grade, which has the last level, called high school level, through virtual environments (Alabdulaziz,2021). In addition to EBA, students of public schools and private schools also attended classes accompanied by their teachers on the distance education platforms created by the institutions. When EBA could not meet the need later, MEB has started broadcasting live lessons through a virtual classroom on EBA, where teachers and students can meet. Pre-service teachers had the opportunity to watch teacher's lectures from all over the world, learn their methods and techniques, and learn about classroom management and practices live (Akkaş Baysal et al., 2022).

Considering all these areas, this process has further increased the gap in inequality of opportunity in education. In today's age, there are many students who work to contribute to their families, have to take care of their siblings, and experience financial difficulties. They lack the right to education because they cannot revert to TV or internet-based education processes (Vahid, 2020).

When the studies in the literature are examined, it is seen that there are studies conducted with classroom teachers (Acar & Peker, 2022; Bozan & Kılıç, 2022), pre-service teachers (Tuncer & Bahadır, 2017), primary school students and parents of primary school students (Kantos et al., 2022; Salti Ayhanöz & Peker, 2022; Türk & Kırıoğlu, 2022). This study aims to examine the distance education processes of mathematics education at the primary school level, taking into account many areas such as students, teachers, pre-service teachers and parents. It is thought that the study will contribute to the literature in terms of addressing distance education processes in the field of mathematics at the primary school level. No similar study has found in the researcher's review.

Research Questions

1. How do the teachers, teacher candidates, parents and students evaluate the distance educational processes?

2. What are the opinions of the teachers, teacher candidates, parents and students on the distance education processes?
3. What are the problems teachers, teacher candidates, parents and students face in distance education processes?
4. What are the recommendations of the teachers, teacher candidates, parents and students in the distance education processes?
5. How do children evaluate the distance education or face-to-face educational processes?

METHOD

Research Design

In the study, Phenomenology one of the qualitative research types have adopted. Phenomenological study defines the common meaning of the experiences of a few persons related to phenomenology or a concept (Creswell,2013, p. 77). The phenomenon of the research has "distance education". The phenomenology pattern expresses our profound analysis of the phenomena we not thoroughly and elaborately aware of (Yıldırım & Şimşek, 2013).

Participants

The participants are comprised of 1st, 2nd, 3rd and 4th grade students, parents of primary school students, pre-service teachers, primary school teachers. All participants have experienced distance education during the pandemic. The study was conducted with 32 primary school teachers, 77 parents of primary school students, 95 primary school students, and 75 pre-service teachers.

Table 1. Participants

	1st class	**2nd class**	**3rd class**	**4th class**	**Total**
Student	7	15	31	42	95
Teacher	10	7	10	5	32
Parent	14	12	29	20	77
Pre-service teacher	64	2	3	6	75
Total	279				

Data Collection Tools

The research data were collected with the interview forms the researchers prepared basing upon the literature. Four separate interview forms were created for pre-service teachers, teachers, parents and students After the forms have revised by taking the opinions of 4 experts consisting of classroom teachers and academicians, a pilot study has conducted with three people and the data were collected through the forms. As there has no opportunity for face-to-face meetings with the participants during

the pandemia and the number of participants was high, interview questions prepared based upon the literature and expert opinion has shared with the participants through Google Form and data has collected in a written way.

Analysis of the Data

To analyze the data, content analysis has made. In the content analysis, the basic purpose has to retrieve the concepts and contents that will justify the collected data (Yıldırım and Şimşek, 2013). When it has used in the educational research; content analysis has made in the transcription of the official documents, diaries or interviews (Patron, 2002). Some codes were used when analyzing the interview responses in the research. The teacher is coded "T", the student is coded "S", the prospective teacher is coded "P.S.T." with the code, parents "S.P." It is coded as.

Validity and Reliability

To ensure the internal validity of the research, expert opinion has consulted while interview forms were being prepared. In this study, interview forms have created with the feedback obtained from 2 classroom teachers and 2 academicians who have experts in the field of classroom teaching. The expert examines the research process within the frame of all documents and gives feedback to the researcher. Also, pilot study has made with three persons through interview forms before the study.

External validity of the study has enabled with detailed description and purposeful sampling. The detailed description is the transfer of the raw data to the reader without any interpretation in a rearranged way in accordance with the emerging concepts and themes. Verifiability, one of the reliability methods, was adopted; An expert who has not been involved in the research processes assessed whether the data, comments and suggestions obtained because of the research were supported by raw data (Yıldırım & Şimşek, 2013). In the research, analyzer triangulation has made. The interviews have coded by the two experts and common codes have written getting the confirmation of third expert. Analyzer triangulation: It has the use of multiple analyzers revising the findings (Patton, 2014).

RESULTS

The results have given below in the order of the research problems, but by dividing them into working groups.

Results for primary school teachers

Results on the question asked to the primary school teachers "What is your evaluation about the distance education processes initiated due to Corona?"

14 teachers stated that they have positive opinions, whereas 18 teachers revealed their negative opinion. When opinions are examined.

Table 2. Opinions of the primary school teachers for the question "What is your evaluation about the distance education processes initiated due to Corona?"

Results	f	Example Sentence
Negative Opinions	18	T.12: "*It is useful for the children, but all the children could not participate and those children without computer cannot attend*."
Positive Opinions	14	T.16: "*Such transformation was necessary. Many teachers, who were not familiar with the technology and had negative attitudes about it, had to develop their digital literacy skills, which I find quite good. Of course, face-fo-face education cannot be replaced with anything. But I can state that the monotony has been removed and at the beginning, it motivated the students. Of course, for the students who do not have access problem*."

Teachers have thought that corona had a negative impact on distance education.

Results on the question asked to the primary school teachers "What are the differences between distance education and face-to-face education?"

The fact that it is inefficient in terms of constructivist approach (20 teachers); T1: *"Distance education is a kind of education destroying the constructivist approach, but face-to-face education is more efficient and comprehensible.* The fact that emotional communication is in low levels (12 teachers); T.2: "*Interaction is very little, emotional transitions are almost impossible. There is no face-to-face communication. Absence of them means that there is no connection. Insufficient education*."

Results on the related to the question asked to the primary school teachers "What do you think about the progress of the distance education process in terms of your students and their parents?"

While 14 of the teachers found the process quite successful, 18 of them unsuccessful and 2 teachers were indecisive. When the teachers finding the system successful are considered; T.14: *"Even though there are willing and dedicated students and parents within this context, there might be parents with fewer opportunities. They can talk to each other and find a solution. Therefore, we can make a good progress in an educational environment which is equal for everybody.". Teachers who think that system is not successful enough;* T.22: "*Parents and students had an adaptation process. Especially parents had difficulty."*

Results on the primary school teachers for the question "How do you teach maths in distance education processes?"

Table 3. Results of the primary school teachers for the question "How do you teach maths in distance education processes?"

Category	Code	f	Example Sentence
Teaching methods of the maths	To give verbal lectures with slides and course presentations	7	*"T. 2: "Slide course presentations and verbal lecture",*
	Use the school books	4	*T.4: "Using our books in the screen",*
	Using EBA	7	*T.12: "I send assignments about the subjects they watch on EBA ",*
	Giving assignments	11	*T.19: "With the daily assignments we have sent to the parents",*
	Through various videos	3	*"T.20: "I send videos related to the subjects learnt on Whatsapp and I reinforce the subject."*

Primary school teachers have provided mathematıcs educatıon through daily homeworks, school books, videos and slides that students sent to their parents.

Results on the primary school teachers on "What kind of recommendations can you give related to the distance education process?"

Primary school teachers gave recommendations on the "increase in technological support in educational processes", *T.5: "The process can progress easier with a series of technological supporting elements such as pen tablet also the system of sound and image should be more developed.* ", on making elimination among the outcomes and continuing educational processes, T.8: "*Tackling with more important outcomes in distance education and focusing on the activities the students will experience themselves will make the process more efficient and entertaining*." , increase in the parent support, T.23 *"I wish that parents will be prudent."*

Results on the primary school teachers to the question "What kind of problems do you encounter? Which solutions did you provide?"

Table 4. Results of the primary school teachers to the question "What kind of problems do you encounter? Which solutions did you provide?"

Category	Code	f	Example Sentence
Problems teachers encounter and solution offers	Sense of professional unqualification	7	*T.2: "I cannot do my profession. The solution is face-to-face education"*
	In ability to follow the learning process of the students	5	*T.3: We handled the situation, I do not experience a problem except for not being able to follow the learning levels of my students and their learning levels."*
	Problem in Internet access	11	*"T.10: We have problems related to Internet connection with the parents. As these problems are directly putting the blame on us, our relations got tense, we behaved more patiently and overcame the obstacles."*
	Inability in emotional communication	7	*"T.8: "Apart from the Internet access, our biggest problem was the sensitivity of the problems. A complimentary word I use for one child may upset the other. Due to this reason, I pay great attention to use the same sentences for all."*
	Disorders in routine of reading a book	5	*"T.10;" There are children who still have question at the end of the course. I cannot log out from the online course system before answering their questions and finishing it. They were having difficulties in reading a book. At that week, we make a session for them to talk about the book they have read and introduce it to their friends, and we meet online in the evenings. I wish patience and success to every teacher and paying my respects."*
	Not controlling the assignments	9	*"T.15: It was a problematic to control the assignment of the students. I resolves this on Whatsapp,* difficulty in class management".

Classroom teachers have experienced many problems, including a feeling of professional inadequacy, inability to monitor students' development, and internet connection problems.

Results for primary school students

Results on the primary school students related to the question "How do you feel about the home schooling you have due to Corona?"

Table 5. Results of the primary school students related to the question "How do you feel about the home schooling you have due to Corona?"

Category	Code	f	Example Sentence
Positive Point of View	When reasons are considered, they are happy to stay at home	26	"S.28: *Since I feel more comfortable at home, I am happy"* *"S.47: "I was so excited at the beginning since homeschooling was a bit different, ...Hmm, it was such a different thing, hmm, well, actually, I feel more comfortable at home, well... I feel as if the school and home ar integrated and united, yeah, it is like this. I feel as if it was previously like this before at school (Short laugh)."*
	Longing	20	"S.*23: "I am not satisfied with my teachers. I miss my own teacher but teachers in television are also giving lectures well."* *"S.56: "I miss my school and my teachers."*
Negative Point of View	Unhappiness	39	*"S18:" The school was beter. I am unhappy.* *"S.35:" I am upset. I wish I could go to school."*
	Fear	10	*"S40: "We cannot touch the teacher, and we cannot tell them anything under these circumstances. He/she does not see us, we see him/her, but he/she cannot hear us, know. Also, when we could not write, the teacher stopped in the school but the teacher in television does not stop and wait."*

While students say that being at home and being more comfortable are positive aspects of doing distance lessons, they also say that distance, longing, and sometimes fear have negative effects.

Results on the primary school teachers related to the question "What are the differences between the education at school and homeschooling?"

While 4 students stated that there was no difference, 91 students stated that there was a difference. Students who thought there was no difference used the following statements: "S.2: "There is no difference", "S.6: "It is the same as school, I learn my lessons better." 91 students who stated that there was a difference stated that their education process at home was better: "S.44: "A more comfortable environment, listening and watching is enjoyable"

Educational processes at home are better: "*S.1: We learn better at school*". There is a decrease in the course hour: "*S.31: "We study course for a long time in school; whereas; we study less at home. In school we have break time, but there is no break time at home. I play with my friends at school but I cannot play at home because I have no friends at home. Learning processes are faster*; "S13: *The courses are taught fast on TV*". There has a decrease in notebook use: "*S42: I do not open the book. There is nothing else*.". There is a change in the courses: "*S43: My assignments have increased a lot, I do not know."*

Results on the primary school students related to the question "What did you feel on the first day of homeschooling?"

Primary school have students expressed how they felt and they stated that they felt excitement on the first day of their education ;"S.4, S.13, S.14, S.15: *" I was excited.",* S32: *" On the first day, I prepared my notebook and pen with great excitement but later I got bored and I did not follow it later, I got bored."* , "S52: *I wore as the same as in the school, I prepared my bag with excitement.", sadness:"* S.7: *"Sadness*", "S.27*: I did not like it. I want to go to school*." S.22: *It's a very boring education. I felt all lonely, I am away from everybody.", surprise;* S*.17. I got surprised*.", "happiness; "*S.2. First day was good*", "*S:15: I felt happy little bit because there was not a punishment for going out, we used to do our homework, play, I was happy since I could go out but now we cannot go out.", "S.19: I was glad and happy at that moment.",* worry: "*S.3: I was worried about whether I will learn my courses well or not.", S.24: I was excited. I was a little bit afraid, but I was happy a little bit.", S.35: I was surprised at the beginning, but I was a little bit happy, as well." "S.35: I got surprised at the beginning and I could not understand how it could be."*

Results on the primary school students related to the question "You continue this education approximately for one month. Now how do you feel?"

It was observed that 28 of the primary school students had positive emotions, while the remaining 67 students had negative emotions about the process due to the reasons detailed below: Considering the positive opinions of the classroom teachers, they felt happy; *"P.4: Good", "P.24: I feel good." "I just got used to it." K.45: I feel good, I don't want to go to school, I play ball more at home, so I don't want to go*." Those who are used to this situation; *"K.5: "I feel like I got used to this education system.", K.14: I got used to learning like this. "I understand the lessons, but I also miss school."*

With regard to the negative feelings of the primary school students are considered, they stated that they felt bored and unhappy; *"S.2,S.3: " I am bored and unhappy.", "S.20: I do not like having a bad course.", S:27: " I could not get used to this. ", they got anxious; S:51: I feel unqualified and incapable. I think about what I will do in the exams when I go to school. I think about if my friends are in the same situation with me."*

Results on the students related to the question "Which lesson do you like listening? Why?"

The students consecutively express it as Maths (24 students), English (21 students), Turkish (17 students), Religious Culture (6 students), Life Sciences (5 Students), Sciences (4 Students), Social Sciences (1 student), 17 student says that they love every courses. Students who do not like listening to Turkish courses: *"S.11: Turkish, maths because we write a lot"*

Results on the primary school students to the question" What are the differences between the Maths you learn at home and the one you learn at school?"

Students stated that the differences have caused by the duration of the course, absence of a classroom environment, change in the activities, no use of notebook, not being able to ask questions to the teacher and the problems they experience in electronicenvironment. Differences caused by the teachers: "S.*37: My teacher was lecturing well, I was able to understand, but I cannot understand now and I get bored."*. The differences in terms of courses: *"S.19: I understand better at school, the course is faster at home."*. Differences caused by absence of class: *"S. 8: We cannot raise hand"*. Changes in the activities: *"S.15: "There is a lot of difference, we do the things with out friends in the school, at that time we control from our notebooks, our friends going to the blackboard solve the problems, if there is a mistake, we tell, but in distance education, we tell the answers directly; therefore it is not too much entertaining enough and therefore, there is too much difference. "*

The students who think that there has a decrease in the use of notebook; *"S.42: I do not solve a problem. I do not write in a notebook. That's all."* The case of not being able to ask a question to the teacher; *"S30: In the school, I can ask about the topics I do not understand but I cannot ask at home, it is not explained well at home. At home, I answer but I cannot say it. I ask the questions directly but he/she does not hear me, I cannot talk to the teacher I learn better at school."*. Difficulties of the electronic environment; *"S.2: It is not efficient all the time in the electronic environment."*

Results for pre-service teachers

Results on the pre-service teachers related to the question "How do you evaluate the distance education processes in primary schools?"

15 of the pre-service teachers have a positive opinion; 60 of them have a negative opinion. Pre-service teachers making positive evaluation supported the idea that it became successful in short time.

Table 6. Results of the pre-service teachers related to the question "How do you evaluate the distance education processes in primary schools?"

Category	Code	f	Example Sentence
Positive opinions about the distance education processes	Successful implementation during pandemia	15	*P.S.T. 60: "I believe that even though it does not satisfy as much as the classroom environment, it is well-organized and if the required attention is given, it will be useful."*
	Continuity of education		*P.S.T.36: Even though it is hard for the students, it is positive in terms of preventing alienation from school.*
	Education infrastructure established with the TV channel		*P.S.T.29: I According to me, it is not as much as inefficient as face-to-face education, but the most appropriate method to prevent the total alienation from the education in this obligatory term. The courses are not only given in Internet bu also on TV, which enables the access."*
Negative opinions about distance education	Absence of interaction between teacher and student	60	*P.S.T.59: I do not think it is much useful. Because the student needs to be in interaction with his/her teacher. The activities in the school are more useful for the student. Especially for 1st and 2nd classes.*
	Absence of school environment		*P.S.T.69: "Inefficient due to the absence of a physical environment"*
	In terms of the differences in the levels of students		*P.S.T.43: "I do not find the education qualified since everybody has different capacity."*
	Difficulty of the education on screen		*P.S.T.12: " I do not think that the education in front of a technological device is useful enough for the students in that age level"*
	Especially for primary school students		*P.S.T.63: "I think that it is not much sufficient for primary school students. There are deficient points in these classes in which especially fundamentals of the courses are given, the course hour is not enough."*

Results on the pre-service teachers related the question "How did the distance education processes in the primary schools affect your future professional life?"

While 66 of the pre-service teachers think that distance education process positively contribute to their professional development, 5 of them are of the opinion that it has a negative contribution, 4 of them reported that it did not give any positive or negative contribution.

Table 7. Results of the pre-service teachers related the question "How did the distance education processes in the primary schools affect your future professional life?"

Category	Code	f	Example Sentence
Pre-service teachers who think that distance education processes contribute to their professional development	In terms of observing the example models of teaching courses	66	*P.S.T.*13: "*As a pre-service teacher, we had the opportunity to follow the lecturing styles of different lectures. We evaluated how it should be or should not be. Watching and listening different teachers gave us an idea for future teaching style.*"
	In terms of teacher's technology use		*P.S.T.*69: "*I learnt how to use the technological devices, distance education courses can be repeated by the students, the student can get bored as there is not a physical environment.*"
	In terms of recognizing the bond established between teacher-student		*P.S.T.25: I examined the teaching styles of the teachers and dialogue of the teacher with the student. I have observed the course contents.*"
			P.S.T.8: "I have recognized the importance of face-to-face education and I have also recognized how much difficulty attracting the attention of children is."
Pre-service teachers who think that distance education has no contribution to their professional development	Change in the perspective on teaching profession	5	*P.S.T.2: "The student can be negatively alienated from the course, he does not understand the course, the course is not taught according to the level of the student.*"
	Anxiety caused by being alienated from undergraduate education		*P.S.T.44: "I believe that the distance education has more negative impacts upon my professional life because my social circle caused my alienation from school environment. I can say that being distant from school made me feel physically and and mentally. I do not think that distance education has positive impact upon my professional development.*"

While pre-service teachers have that distance education contributes to teachers by seeing their education models, they also think that it has negative effects on their own education due to the inadequacies in the education of students.

Results on the pre-service teachers related to the question "How do you evaluate the Maths course in primary schools according to your experience?"

62 pre-service teachers had a negative evaluation of the Maths education in distance education processes; whereas 13 pre-service teachers evaluated the Maths education as successful.

Table 8. Results of the pre-service teachers related to the question "How do you evaluate the Maths course in primary schools according to your experience?"

Category	Code	f	Example Sentence
Pre-service teachers who think that Maths courses are successful	In terms of the fact that teachers pretend as if there are students in front of them	13	*P.S.T.2: "I have not watched EBA, but as far as I see from my cousin, he loves the Maths course, he says that it teaches very well."*
	In terms of the images, presentations and videos		*P.S.T.2: "The video content is appropriate for the curriculum. Contents are sufficient and are supported with activities. "*
	Short assignments given at the end of the course		*P.S.T.30: "The teacher gives small assignments to the children and enables them to focus on the course well. Also, the teacher, himself, makes good activities. He teaches the course in a cheerful and entertaining way. "*
Teachers who think that Maths course is unsuccessful	In terms of the fact that there is no control	62	*P.S.T.19: "Maths course should be performed with a teacher knowing the students and determines an appropriate teaching style for the children, every child is put in the same pot. It is getting hard to perceive it. In maths, the truth is taught with a false thing. Since the teacher cannot know if the student makes correct or wrong, the education is not effective."*
	In terms of the fact that the system does not respond the need		*P.S.T.18: "It is hard to understand. Because students feel the need to ask many questions about the thing they learn for the first time. Education is insufficient since this need is not fulfilled."*
	Lack of written material such as use of a notebook		*P.S.T.23: "Students cannot take a note as they do in the school. For example, my niece postpones writing all the time, he slowly takes notes after the course. While solving questions, teachers skips to solving the question before the students finish the process. The teacher may wait long enough but every student is not in the same level unfortunately."*
	Difficulty of a course, which is challenging i terms of a branch, in online environment		*P.S.T.4: "I do not think that Maths courses taught in distance education are sufficient enough since Maths is a very abstract subject for the age of children who are in primary school, yet. Including the student in a Maths course in a classroom environment collectively with his/her friends through playful methods is a more efficient teaching style than the one-sided interaction of the teacher with the student on the screen."*
	Absence of practice		*P.S.T.29: "As far as I experienced from a student observing the Maths course, subject teaching and number of questions are insufficient. It takes long for the student to understand the topic and the student does not understand the question the teacher solves. Therefore, the student show a slow progress in the course. With the support of the parents, the student can understand the course."*
	Conducting the lessons at the most basic level.		*P.S.T.4: "As far as I have heard from my social circle, the teachers were giving the course with simple examples while trying to address to everybody."*

While 13 prospective teachers think that teaching mathematics in distance education is succesful, 64 prospective teachers think that it is unsuccessful.

Results on the pre-service teachers for the question "What kind of recommendations can you give on the distance education process in primary schools?"

Table 9. Results of the pre-service teachers for the question "What kind of recommendations can you give on the distance education process in primary schools?"

Category	Code	f	Example Sentence
Recommendations of the pre-service teachers related to the distance education processes	The interaction between teacher and student should be increased.	23	*P.S.T.15: "The most efficient person during distance education process is of course the teacher. The teachers should teach the subjects taking the development level of the children The teachers should design the courses in a more playful manner and include the children within the course with supportive methods. The unique purpose of the teachers should be having a connection with students rather than transferring the subject to them. I think that they should give education in such a manner, which is at least, similar to their education environment."*
	Live stream courses should be increased	20	*P.S.T.1: "Live stream courses will be better rather than this system."*
	Interactive platform should be created after the live stream course	13	*P.S.T.22: "According to me, teaching only two courses a day is insufficient. Students do not have only two courses in school. They also have courses such as music, visual arts. I think these two courses should be taught online, as well. New songs should be taught in the music course. In the course of visual arts, students should draw a picture or make an activity with the teacher."*
	Duration should be increased.	9	*P.S.T.4: "The teachers with high energy should be preferred, the animations and images that will attract the attention of children should be preferred more and the course durations should be evaluated as short but efficiently."*

Pre-service teachers have suggested increasing the number of live lessons in distance education, adding courses, and having interactive activities for teachers and students.

Results on the pre-service teachers related to the question "How do you evaluate the Maths course in primary schools according to your experience?"

62 pre-service teachers had a negative evaluation of the Maths education in distance education processes; whereas 13 pre-service teachers evaluated the Maths education as successful.

Table 10. Results of the pre-service teachers related to the question "How do you evaluate the Maths course in primary schools according to your experience?"

Category	Code	f	Example Sentence
Pre-service teachers who think that Maths courses are successful	In terms of the fact that teachers pretend as if there are students in front of them	4	*P.S.T.2: "I have not watched EBA, but as far as I see from my cousin, he loves the Maths course, he says that it teaches very well."*
	In terms of the images, presentations and videos	3	*P.S.T.2: "The video content is appropriate for the curriculum. Contents are sufficient and are supported with activities. "*
	Short assignments given at the end of the course	6	*P.S.T.30: "The teacher gives small assignments to the children and enables them to focus on the course well. He teaches the course in a cheerful and entertaining way. "*
Teachers who think that Maths course is unsuccessful	In terms of the fact that there is no control	2 1	*P.S.T.19: "Maths course should be performed with a teacher knowing the students and determines an appropriate teaching style for the children, every child is put in the same pot…In maths, the truth is taught with a false thing. Since the teacher cannot know if the student makes correct or wrong, the education is not effective."*
	In terms of the fact that the system does not respond the need	1 6	*P.S.T.18: "It is hard to understand. Because students feel the need to ask many questions about the thing they learn for the first time. Education is insufficient since this need is not fulfilled."*
	Lack of written material such as use of a notebook	1 5	*P.S.T.23: "Students cannot take a note as they do in the school. While solving questions, teachers skips to solving the question before the students finish the process. The teacher may wait long enough but every student is not in the same level unfortunately."*
	Difficulty of a course, which is challenging i terms of a branch, in online environment	5	*P.S.T.4: "I do not think that Maths courses taught in distance education are sufficient enough since Maths is a very abstract subject for the age of children who are in primary school, yet. Including the student in a Maths course in a classroom environment collectively with his/her friends through playful methods is a more efficient teaching style than the one-sided interaction of the teacher with the student on the screen."*
	Absence of practice	3	*P.S.T.29: "As far as I experienced from a student observing the Maths course, subject teaching and number of questions are insufficient.. Therefore, the student show a slow progress in the course. With the support of the parents, the student can understand the course."*
	Conducting the lessons at the most basic level.	2	*P.S.T.4: "As far as I have heard from my social circle, the teachers were giving the course with simple examples while trying to address to everybody."*

Results for parents of the primary school students

Results of the parents of the primary school students related to the question "How do you evaluate the psychology of your children during distance education?"

25 of the parents of the primary school students state that the psychology of their children is in good level, 52 of them stated that the process had a negative impact upon them. The parents who have a positive attitude; *"S. P.2: I think they are psychologically well, we do not talk about the issues related with corona at home, the children are happy to be with us at home", "S.P. 48: " In deed, he is psychologically happy. First of all, he is happy to be at home. He studies courses with our help. He does his homework with our support. Otherwise, if we let him free, he would not give up using the Tablet."*

Parents who think that their children are negatively affected; *"S.P 18: I do not have a positive opinion, I feel down psychologically. Put yourself in a child's shoes. He/she cannot go out, play and relieve the stress, he/she got aggressive, I hope everything will be same as before when he continues to stay at home.", "S.P.27: My child got used to the phone, his speech style change, he has started to get angry easily, he got bored of reading, his regular sleep routine was destroyed, his cleaning routine was disrupted, he started to focus on the things he likes most, he started to be desensitized."*

Results of the parents of the primary school students related to the question "How do you evaluate the relation between your child and his/her teachers in distance education process?"

47 parents of the primary school students think that their children continue to have a good relationship with their teachers in distance education processes; whereas 30 of them think that their relations are negatively affected in this process. The parents who think positively; "S.P.2: "*They talk regularly everyday.*", "S.P.14: *He is in dialogue with his teachers all the time. Everyday they make their assignment and send to their teachers. The teacher evaluates the assignments. They are interested, indeed. They do not leave the children alone in the distance education process*.". The parents, who think that it is negatively affected, made a statement: *"S.P.18: There is no relation between him and his teachers. In deed, he watches the course on TV. They send assignment from time to time but I am not so much glad.", "S.P.48: I explicitly observed that she loves her teacher, she really misses him and feels the absence of him.*

Results of the parents of the primary school students "How do you evaluate the relation of your child with his/her school friends?"

Table 11. Results parents of the primary school students "How do you evaluate the relation of your child with his/her school friends?"

Category	Code	f	Example
Opinions of the parents of the students about the relation of their children with friends.	Parents who think that their children have a good level of communicating with friends	44	*S.P. 63: Children have a video chat with their friends on Whatsapp There might be chat sessions after the courses which are done through Zoom."*
	Parents who think that they have less interaction	12	*S.P.24: Even though they have rare meetings, they miss each other and they get happy even when they see each other in the computer. It is a good connection."*
	Parents who think that there is no communication	11	*S.P.37: He/she sometimes talks on the phone with some friends, but of course this is not enough. Actually they are play children. She misses playing with his/her friends."*

When parents of primary school students looked at their children's relationships with other friends, they said that their interactions have decreased, with some students interacting well and some students not communicating at all.

DISCUSSION, CONCLUSION AND SUGGESTIONS

The findings of this study reveal several significant challenges experienced during the transition to distance education in primary schools, especially in mathematics instruction, due to the COVID-19 pandemic. Students reported a noticeable decline in motivation and engagement, with many stating that their emotional connection with teachers and peers had weakened. This finding aligns with Çakmak's (2013) work, which emphasizes that distance education lacks a constructivist approach and hinders emotional bonds among students. Teachers made efforts to continue lessons through slides, videos, and EBA activities but faced challenges such as unequal access to technology and insufficient educational support (Bilgiç & Tüzün, 2005; Bozan & Kılıç, 2022). Primary school students in grades 1 to 4 expressed dissatisfaction with shortened lesson durations and the lack of interaction, particularly in subjects like mathematics. Many students noted a slower learning pace due to the absence of face-to-face communication, highlighting a key disadvantage of online education. This experience resonates with the findings of Türk & Kırıoğlu (2022) and Panchabakesan (2011), who found that students experienced social isolation and a decline in motivation because of limited interaction with others.

Pre-service teachers similarly reported challenges with communication barriers and a lack of technological resources. While they appreciated the opportunity to observe different teaching styles, they found the lessons ineffective due to poor organization and the absence of a supportive learning environment. This mirrors the conclusions of Tuncer and Bahadır (2017), who stressed the importance of an effective communication environment, improved teaching materials, and enhanced teacher training. Parents also reported that their children were psychologically impacted by the transition,

observing changes in behavior and eating habits. Students became more isolated from their peers, and their academic progress, particularly in mathematics, declined. These challenges were compounded by difficulties in internet connectivity, adaptation to new learning environments, and other infrastructural issues, as noted by Kultaş & Çalışkan (2021) and Gezen & Efendioğlu (2021). Additionally, Şenkal and Dinçer (2012) and Uzunboylu et al. (2010) pointed out that the insufficient technical infrastructure in e-learning environments significantly affected the overall quality of education. First-grade students, as well as those with special needs like attention deficit disorders, faced particular difficulties in adapting to the online learning environment.

The analysis of these findings indicates that the shift to distance education during the pandemic exacerbated pre-existing educational inequalities, particularly for students without access to necessary technology. The lack of adequate resources, insufficient teacher preparedness, and ineffective communication and interaction in the online environment negatively affected the learning process, especially in subjects such as mathematics. Previous research by Şenkal and Dinçer (2012) corroborates these findings, indicating that the lack of technical infrastructure can hinder the effectiveness of e-learning. Furthermore, the study also revealed that students struggled to stay engaged and active in their learning, particularly in mathematics, a subject that requires more intensive interaction and problem-solving. Studies by Jones (2007) and Cho & Berge (2002) have highlighted similar concerns, showing that distance education can struggle to maintain high levels of student participation and teacher-student interaction.

In light of these challenges, several recommendations can be made to improve the effectiveness of distance education in primary schools. First, it is essential for teachers to receive training in digital teaching methods and strategies that promote interaction and engagement, ensuring they can effectively support their students. Schools must also invest in technological infrastructure to guarantee equal access to learning tools, including devices and reliable internet connections. Developing interactive learning platforms that facilitate real-time teacher-student communication should be prioritized, as these platforms can encourage active student participation. Furthermore, involving parents more actively in the educational process can help students navigate the challenges they face with technology and motivation, ultimately enhancing their learning outcomes. Special attention should be given to subjects like mathematics, where teachers should use more visual materials, balance lesson durations, and provide additional support to students who may struggle with the content.

These recommendations reflect the need for improvements in the distance education system, as emphasized by previous studies such as Tuncer and Bahadır (2017). To overcome the difficulties encountered during the pandemic and ensure a more effective and inclusive learning environment, it is crucial to address issues related to technology, teacher preparation, and student engagement, especially in subjects that require intensive interaction. Finally, addressing the social and psychological effects of

distance education is also important, as students have expressed feelings of isolation and disengagement, which need to be mitigated by fostering a sense of community and connection even in online environments.

In conclusion, the research reveals the importance of addressing several critical areas to improve the effectiveness of distance education, particularly in primary schools. Teachers should receive comprehensive training in digital teaching methods to ensure that they can engage students effectively in online lessons, use interactive tools, and create a more supportive learning environment. Schools should invest in enhancing technological infrastructure, ensuring that all students have access to necessary devices and reliable internet connections, which are essential for equitable participation in online education. Additionally, creating more interactive, live-streamed lessons and communication platforms that allow for real-time teacher-student interaction will help foster active engagement and participation in lessons. The involvement of parents in the educational process should be increased to help students overcome challenges related to technology and motivation. For subjects such as mathematics, it is crucial that teachers employ more visual materials, balance lesson durations, and provide additional support for students who struggle with the content.

These recommendations align with previous research suggesting that for distance education to be more effective, it must address issues of technological inequality, teacher preparedness, and student engagement. By improving these areas, we can create a more inclusive, supportive, and productive online learning environment that meets the needs of all students, particularly in critical subjects like mathematics. Ultimately, while distance education offers a necessary solution in times of crisis, its long-term effectiveness hinges on addressing these foundational challenges.

Acknowledgement

No potential conflict of interest was reported by the author(s).

Datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

REFERENCES

Acar, S., & Peker, B. (2022). Mathematics teachers' views on synchronous distance education. *Journal of Education for Life*, *36*(2), 453-471. https://doi.org/10.33308/26674874.2022362401

Adarkwah, M. A. (2021). "I'm not against online teaching, but what about us?": ICT in Ghana post Covid-19. *Education and Information Technologies*, *26*(2), 1665-1685.

Akkaş Baysal, E., Ocak, G., Ergun, M., & Yurtseven, R. (2022). Students', teachers', and parents' views on the use of EBA and EBA TV as distance education tools in secondary education. *Erzincan University Journal of Education Faculty, 24*(1), 82-96. https://doi.org/10.17556/erziefd.876360

Akkaya, S. (2021). Action research on the efficient use of EBA in the process of distance education: The case of Ordu. *5*(2), 144-164. https://dergipark.org.tr/en/pub/enderun/issue/65414/935223

Aktümen, M., & Kaçar, A. (2003). The role of computer assisted ınstruction ın the teaching of expressions among primary education eight grade students and evaluation students' opinion about computer assisted ınstruction. *Kastamonu Education Journal, 11*(2), 339-358.

Akça, G., & Akgün, E. (2020). Problems experienced by primary school students in the distance education process. In *EJERCongress 2020 Conference Proceedings* (Vol. 402, p. 409).

Alabdulaziz, M. S. (2021). COVID-19 and the use of digital technology in mathematics education. *Education and Information Technologies,*26, 7609–7633. https://doi.org/10.1007/s10639-021-10602-3

Bal, A. P., & Bedir, S. G. (2020). The examination of mathematics teachers' technological pedagogical content knowledge levels. *International Journal of Educational Studies in Mathematics, 7*(3), 198-213. https://doi.org/10.17278/ijesim.737612

Batdal Karaduman, G., Akşak Ertaş, Z. & Duran Baytar, S. (2021). Investigation of teachers' experiences regarding mathematics courses carried out by distance education. *International Primary Education Research Journal,* 5 (1), 1-17. Retrieved from https://dergipark.org.tr/en/pub/iperj/issue/61098/855615

Başer, N., Köroğlu, H. & Keşan, C. (1999). Computer assisted mathematics teaching training of pre-service teachers and teaching practices a research on reflections on ınstitutions. *Buca Education Faculty Journal*, (10).

Basol, G., & Zabun, E. (2014). The predictors of success in Turkish high school placement exams: exam prep courses, perfectionism, parental attitudes and test anxiety. *Educational Sciences: Theory and Practice*, *14*(1), 78-87.

Akkaş Baysal, E., Ocak, G., & Ocak, İ. (2020). Parents' views on EBA and other distance education activities of preschool children during the COVID-19 pandemic. *International Journal of Social Sciences Education Journal, 6*(2), 185-214. https://doi.org/10.47615/issej.835211

Bilgiç, H.G. and Tuzun, H. (2015). Problems encountered in higher education institutions web-based distance education programs. *Open Education Applications and Research Journal*, *1 (3),* 26-50.

Bilgin, H. (2010). Using internet applications as a solution for vocational adult education. *Procedia Social and Behavioral Sciences*, 2, 5720-5725.

Birgin, O., Kutluca, T., & Gürbüz, R. (2008). The effect of computer assisted ınstruction on student achievement in seventh grade mathematics course. *8th International Educational Technology Conference* (pp. 879-882). Anadolu University, Eskisehir.

Born, S., & Arslan, Z. (1993). Educational technology applications and educational tools. Ankara: *Tekışık Offset.*

Bozan, N., & Kılıç, D. (2022). Primary school teachers' views on distance education. In *2nd Internatıonal Conference On Educatıonal Technology and Onlıne Learnıng-ICETOL 2022* (p. 141).

Burgess, S. and E Greaves (2013). Test scores, subjective assessment, and stereotyping of ethnic minorities. *Journal of Labor Economics,* 31(3), 535–576.

Butakın, V., Kutluca, T., Çatlıoğlu, H., Birgin, O., & Aydın, M. (2009). Teacher and student views on teaching based on activities developed according to multiple ıntelligence theory. *Dicle University Journal of Ziya Gökalp Education Faculty, (12),* 1-16.

Can, E. (2004). Evaluation of distance education students' education. *XIII. National Educational Sciences Congress.* Malatya.

Cho, S.L. & Berge, Z., L. (2002). Overcoming barriers to distance training and education. http://www.emoderators.com/barriers/cho.html

Cojocariu, V. M., & Mareş, G. (2014). A study on the primary school teachers' view upon the essential factors determining the (non) involvement of the family in the education of primary school students in Romania. *Procedia - Social and Behavioural Sciences*, *142*, 653–659.

Çakmak, A.Ç. (2013). Evaluation of distance education service by students: An application at Karabuk University. *Istanbul Commerce University Journal of Social Sciences*, *12 (23),* 263-287.

Dawadi, S., Giri, R., & Simkhada, P. (2020). Impact of covid-19 on the education sector in Nepal: Challenges and coping strategies. https://doi.org/10.31124/advance.12344336.v1

Dawadi, S. (2019). *Impact of the secondary education examination (english test) on students and parents in nepal*. Unpublished PhD thesis, The Open University, UK.

Demir, F., & Özdaş, F. (2020). Examining teachers' opinions related to distance education in the covid-19 process. *Journal of National Education*, *49*(1), 273-292.

Deniz, S. & Bağçeci, B. (2022). Investigation of teachers' attitudes towards distance education in terms of various variables, *E-International Journal of Educational Research, 13(6),* 45-64. https://doi.org/10.19160/eijer.1168784

Demirel, Ö., Seferoğlu, S., & Yağcı, E. (2001). *Instructional technologies and material development* Pegem Publishing.

Digitaliseringskommissionen (2015). *Gör Sverige i framtiden – digital kompetens.* Stockholm: Digitaliseringskommissionen.https://www.regeringen.se/contentassets/e0acd9a7659d4c138c6666d2d5e21605/gor-sverige-i-framtiden--digital-kompetens-sou-201528

Erbaş, K. (2005). Problem solving with multiple representations and the role of technology. *The Turkish Online Journal of Educational Technology. 4 (4),*12

Ersoy, Y. (2002). Acquiring new functions and roles of classroom and mathematics teachers at the threshold of the information age. *Elementary Education Online, 1 (2).* Retrieved May 9, 2020, from http://ilkogretim-online.org.tr/index.php/io/article/viewFile/2064/1900

Ersoy, Ö. (2001). *Children with special needs and their education: Special education.* Ya-Pa.

Ersoy, Y. (2005). Advanced movements in renewal of mathematics education I: Technology supported mathematics teaching. *The Turkish Online Journal of Educational Technology*,*4 (2).*

European Commission (2015) *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee Of The Regions- A digital single market strategy for Europe,* COM (2015) 192 final.

ETF (2020). Coping with covid-19: *Mapping education and training responses to the health crisis in ETF partner countries*. Torino, Italy: ETF Publishing.

Gencer, A. S., Doğan, H., Bilen, K., & Can, B. (2019). Bütünleşik STEM eğitimi modelleri. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, 45*(45), 38-55. https://doi.org/10.9779/PUJE.2018.221

Goldman, L. S., Genel, M., Bezman, R. J., & Slanetz, P. J. (1998). Diagnosis and treatment of attention-deficit/hyperactivity disorder in children and adolescents. *Jama*, *279*(14), 1100-1107.

Hopegood, S. (2020). Coronavirus: Our principles, values, and shared humanity. *Worlds of Education*. Retrieved June 29, 2022, from https://www.worldsofeducation.org/en/woe_homepage/woe_detail/16719/%C2%AB-coronavirus-nos-principes-nos-valeurs-et-notrehumanit%C3%A9-commune-%C2%BB-par-susan-hopgood

Gezen, M. O. & Efendıoglu, A. (2021). Investigating views of classroom teachers on distance education ımplemented through the education ınformation network television channel (EBA TV). *Ahi Evran University Journal of Social Sciences Institute,7*(3),776-791. DOI:10.31592/aeusbed.913343.

He, T., Gou, W. J., & Chang, S. (2014). Parental involvement and elementary school students' goals, maladaptive behaviours, and achievement in learning English as a foreign language. *Learning and Individual Differences,* 39, 205–210.

Jones, PW. (2007). Education and World order. *Comparative Education. 43(3),* 325-337.

Kacar, A.Ö. & Doğan, N. (2007). *Computer aided preschool education the role of education.* Academic Informatics 2007, *Dumlupınar University*, Kütahya

Karalar, H. (2016). Database. *Pegem Citation Index,* 315-355.

Karataş, İ., & Güven, B. (2003). Methods used to evaluate problem solving behaviors: Potential of clinical interview, *Elementary Education Online*, 2 (2). Retrieved May 9, 2020, from https://dergipark.org.tr/en/pub/uefad/issue/16690/173469

Kimmins, D., & Bouldin, E. (1996). Making mathematics come alive with technology. *Proceedings of the Mid-South Instructional Technology Conference, 1st*, Murfreesboro, Tennessee, March 31–April 2. Retrieved from http://www.eric.ed.gov/PDFS/ED400796.pdf

Kirnik, G. (1998). *The effects of computer aided teaching method and traditional method on student success in teaching equations at the 7th grade level*. Unpublished Master Thesis.

Kultaş, E. & Çalışkan, E.F. (2021). The problems of primary school teachers experienced in distance education during covıd-19 pandemic. *Turkish Journal of Education, 6(2)*, 507-521. https://dergipark.org.tr/en/pub/turkegitimdergisi/issue/66454/1022670

Moore, MG & Anderson, WG (Eds.). (2007). *Distance education handbook*. L. Erlbaum Associates.

Moore, W. D. (2008). *Comparison between computer assisted ınstruction and traditional method ınstruction as applied to teaching algebra to urban high school students* (Unpublished doctoral dissertation). Saint Louis University.

Moore, JL, Dickson-Deane, C. & Galyen, K. (2011). E-Learning, online learning and distance education environments: Is it the same? *Internet and Higher Education*, *14* (2), 129-135.

Necşoi, D. V., Porumbu, D., & Beldianu, I. F. (2013). The relationship between parental style and educational outcomes of children in primary school in Romania. *Procedia - Social and Behavioural Sciences*, *82,* 203–208.

OECD (2020). *A framework to guide an education response to the COVID-19 Pandemic of 2020*. Paris: OECD Publishing

Okan, K. (1983). *Educational technology: methods-techniques and application*. Okan Publications.

Öner, A. T. (2009). *The effect of technology-supported instruction on students' achievement level, attitudes and permanence in elementary 7th grade algebra teaching* (Doctoral dissertation, DEU Institute of Educational Sciences).

Öner, M. (2009). *Kazan-Tatar Turkish Dictionary.* Turkish Language Association Publications.

Özer, M. (2020). Covidien-19 in Turkey discarded by the ministry of education in educational policy outbreak process steps policy actions by the ministry of national education in the times of covidien-19. *Kastamonu Education Journal, 28* (3), 1124-1129.

Panchabakesan, S. (2011). Problems and prospectives in distance education in India in the 21st century, *Problems of Education in The 21st Century*, *30,* 113-122.

Pandit, S. (2020*). Sankatma nirantar sikai.* Gorkhaparta (07 May). Available at: https://gorkhapatraonline.com/education/2020-05-06-13805

Patton, M. Q. (2014). *Qualitative research and evaluation methods*. Ankara: Pegem Academy

Raycheva, N. (2008). Distance education for biology teachres-two educational technologies. *Journal of Uludağ University Education Faculty*, *XXI* (1), 173-181.

Reimers, FM, & Schleicher, A. (2020). *A framework to guide the education response to the 2020 COVID-19 Pandemic*. OECD. Retrieved April, 14, 2020

Saavedra, J. (2020). *Educational challenges and opportunities of the Coronavirus (COVID-19) pandemic.* World Bank Blogs. Retrieved from https://blogs.worldbank.org/education/educational-challenges-and-opportunities-covid-19-pandemic

Saltık Ayhanöz, G. & Peker, AK (2022). Investigation of parents' views on mathematics lesson in the distance education process of the covıd-19 pandemic period. *Cappadocia Journal of Education (CAPED)*. *3 (1),* 18-32. https://dergipark.org.tr/en/pub/kaped/issue/72984/1187579

Sulak, S. A. (2002*). The effect of computer-aided instruction on student achievement and attitudes in mathematics lesson* (Doctoral dissertation, Selcuk University Institute of Science).

Şenkal, O., & Dinçer, S. (2012). Transforming traditional classrooms into a distance education platform: a model study. *Information Technologies Journal*, *5* (1), 13-18.

Tanaçan, M. (1994). *The role of computer aided education in teaching equations with an unknown in secondary schools.* (Unpublished master's thesis). Hacettepe University, Ankara, Turkey.

Topçu, Z. (2022). Distance education from the perspective of elementary school students and their parents during covid-19 pandemic. *Journal of National Education*, *51* (233), 461-488 .

Toprakçı, E.(2006-a) Perceptions related to ınformation and communication technologies (ICT) by Managers and Teachers in the Primary and the Secondary Schools (The example of Sivas)-*EJER-EAD Journal of Educational Research, 24.*.

Toprakçı, E. (2007). The profiles of the use of the internet for study purposes among university students. *The Turkish Online Journal of Educational Technology - TOJET, 6*(3), 129–145. Retrieved from http://www.tojet.net

Toprakçı, E. (2006). School administrators in Turkey and computers in teachers' house professional purposes profiles (Sivas Example). *The Turkish Online Journal of Educational Technology - TOJET, 4*(2). Retrieved from http://www.tojet.net/articles/428.htm

Tuluk, G., & Kaçar, A. (2007). Function of Computer Algebra Systems (BCS) The effect of concept on teaching. *Kastamonu Education Journal*. Number: *15* (2). Sy: 661-674.

Tuncer, M., & Bahadır, F. (2017). Evaluation of distance education programs according to the opinions of students studying in these programs. *Evaluation, 1*(2). Retrieved from http://murattuncer.org/FileUpload/as892548/File/mtuncer_fbahadir.pdf

Tuncer, M., & Tanaş, R. (2011). Evaluation of academicians' views on distance education programs (Fırat and Tunceli Universities Example). *Elementary Education Online Journal, 10* (2), 776-784.

Tuncer, M., & Taşpınar M. (2007). Virtual education and its future. *Electronic Journal of Social Sciences*, *6*(20), p.112-133.

Türk, H. & Kıroğlu, K. (2022). Opinions of primary school teachers parents and primary school students about distance education. *Mehmet Akif Ersoy University Journal of Education Faculty*, *63,* 16-48 https://doi.org/10.21764/maeuefd.914919

UNESCO. (2020). How are countries addressing the Covid-19 challenges in education? A snapshot of policy measures. *Global Education Monitoring Reports*. United Nations Educational, Scientific and Cultural Organization.

UNESCO. (2020, March 27). Teacher task force calls to support 63 million teachers touched by the COVID-19 crisis. UNESCO. Retrieved from https://en.unesco.org/news/teacher-task-force-calls-support-63-million-teachers-touched-covid-19-crisis

Vahid, F. (2020). A message from a professor to fellow professors and students about at-home learning during COVID-19. *YouTube*. https://www.youtube.com/watch?v=DAqgSUaX8fA&feature=youtu.be&fbclid=IwAR2ODTFlDugrghcvY5cdxMOBIMR2GLU0yawVue5372hKHjpl2aExZAN5yOc%29

Yıldırım, A., & Kete, R. (2002). Productivity and use of technology in biology lessons. *Proceedings Book of the 5th National Science and Mathematics Congress.* Ankara: National Education Press.

Yıldırım, S. (2000). Effects of educational computing course on pre-service teachers and in-service teachers: Discussion and analysis of attitude and use. *Journal of Educational Research in Computing*, *32* (4), 479-495.

Yıldırım, A., & Şimşek, H. (2013). *Qualitative research methods in the social sciences* (9th ed.). Ankara: Seçkin Publishing House.

Yurtbakan, E. & Aydoğdu İskenderoğlu, T. (2022). Primary school teachers' experiences ın teaching mathematics with distance education ın the covid-pandemic period. *Journal of National Education, 51* (234), 1733-1754 . https://doi.org/10.37669/milliegitim.822566

Zhou, L., Wu, S., Zhou, M., & Li, F. (2020). 'School's out, but class' on', the largest online education in the world today: taking china's practical exploration during the covıd-19 epidemic prevention and control as an example. *Best Evidence in Chinese Education, 4*(2), 501-519.