IJETS@R
(ISSN: 2587-0238)

Gökmen, M.B. & Aydın, Ş. (2023). Secondary School Students Opinions on The Problems and Solutions of Mathematics Course Taught by Distance Education, *International Journal of Education Technology and Scientific Researches, 8(24), 2585-2599.*

DOI: http://dx.doi.org/10.35826/ijetsar.656

Article Type: Research Article

SECONDARY SCHOOL STUDENTS' OPINIONS ON THE PROBLEMS AND SOLUTIONS OF MATHEMATICS COURSE TAUGHT BY DISTANCE EDUCATION[1]

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Received: 14.01.2023 *Accepted: 03.09.2023* *Published: 01.10.2023*

ABSTRACT

The aim of this study is too undefined the views of secondary winding civilis students towards outstrip education. The case study, which is included in the qualitative explore method, was used. The study group of the explore consisted of 148 secondary school students studying in secondary winding schools related to the Ministry of subject Education in the central district of Niğde Province in the 2021-2022 academic year. The "Interview spring for Distance Learning" was used to find answers to the research problems. The contemplate was conducted in case study design, one of the qualitative research designs. Content analysis was used in the analysis of the data. It was complete that the students establish distance lessons more ineffective than face-to-face lessons, that they had problems with the system, and that these were problems side by side to technological deficiencies or due to systemic problems. Students have also verbalized negative views during the distance breeding process, stating that they couldn't understand the subjects well, communication with teachers decreased, and the work was not efficient. In this context, in order for students to benefit from distance education applications to the highest level, subject field infrastructure systems should be strengthened, and the teaching-learning process should be made more effective.

Keywords: Mathematics lesson, Mathematics teaching, Distance learning, Secondary school students.

[1] This article was produced from the master thesis conducted by the first author under the supervision of the second author.

INTRODUCTION

Mankind has been sharing information since the existence of the world. This information sharing has differentiated and developed according to the changing age. One of the important developments today is technology. Technology is developing rapidly and it is of great importance to increase the level of awareness and knowledge in the society about technological innovations in order to make them suitable for the age we live in the face of the reflections of these developments on education. With the rapid changes in the world, researches to access information more quickly gain value (Keskin Yorgancı. 2019). In today's age of technology, technical tools and software have started to be used in mathematics teaching. This situation has enabled teachers and students to acquire different skills. While teachers used to transfer information only in classroom environments, today, with cloud computing technology, students have the opportunity to be involved in the teaching process from anywhere they want with their computers, tablets and mobile phones without the need for a classroom environment.

In Turkey, the first cloud technology education was carried out in 1984-1986, and this application was based on the computer-aided education project. In this context, a great deal of investment was made in cloud computing technology (CCT) services and learning infrastructure in order to provide students with a learning environment consisting of various technology-supported richness and to improve students' information communication technology skills (Yedekçioğlu, 1996). These investments have continued day by day with the integration of new technological developments into education. Finally, this system was integrated into education within the scope of the Opportunities Research and Technology Improvement Movement (FATIH) project for equal opportunities in education and the Education Information Network (EBA), an e-content-centred education platform, was implemented.

Due to the social developments, formal education has been suspended in many countries and courses have started to be taught through distance education. However, this transition was not planned and systematic, but sudden and brought along some problems. It is of great importance for countries to educate their people. Education should be offered to individuals in a planned and systematic manner. Due to the pandemic, education in countries has undergone rapid innovation. Generally, there is resistance to innovation. However, the main problem in this innovation movement is not the resistance to innovation. The main problem is that it happens suddenly and without being ready (Sayan, 2020).

In the past periods in our country, ICT and EBA have not been given enough importance in education. Today, the importance of distance education has started to be perceived in line with the social developments. Distance education has been realised on EBA by using ZOOM infrastructure at primary and secondary education levels in our country. However, this change has brought problems due to its rapid and sudden nature. Considering the importance of EBA in this process, it is necessary to determine to what extent it meets the needs and to what extent it does not. As a result of this examination, answers will be sought to what the problems students experience on EBA are and how these problems affect their attitudes towards mathematics course. For this

reason, analysing students' opinions will be an important source in determining the problems experienced and the needs. These views will guide us to make the teaching more active and permanent. In the future, in case of such a need, it will become clearer what should and should not be done. For this purpose, the following questions were asked to the students:

1. What are the opinions of the students about how the mathematics courses given by distance education should be?
2. What are the problems encountered by the students in the mathematics course in the distance education process and their opinions about these problems?
3. What are the students' suggestions for solutions to the problems encountered in distance education courses?

METHOD

In this part of the study, information about the research model, study group, data collection tool and data analysis are given.

Research model

In this study, which aims to determine the views of secondary school students who receive education through distance education on distance education practices, qualitative method was used. In qualitative research methods, situations and events are tried to be understood from the perspectives of the participants. This method is based on the fact that there are different opinions about the same situation and how facts are shaped in social environments (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz, & Demirel, 2019). The study was conducted in case study design, one of the qualitative research types. Case study is a research method in which an event or situation is examined in detail and data are collected systematically to understand how the event takes place in its natural environment (Stake, 1995). This approach can involve a group of individuals or an organisation and is generally used to provide in-depth understanding, explain events, reveal relationships and examine the practical applications of theoretical knowledge (Yin, 1984). The main purpose of the case study is to present the results of a situation. The prominent feature of qualitative case study is the in-depth investigation of one or more situations. In other words, the factors related to the situation (environment, individuals, events, processes, etc.) are analysed with a holistic approach and the focus is on how these factors affect the relevant situation and how they are affected by the relevant situation. In this method, the researcher observes, collects and analyses data to fully understand the situation (Yıldırım & Şimşek, 2018). In this study, the mathematics course given through distance education was taken as a case. Using the interview technique, it was determined what the students' views were about the situation.

Study group

The study group of the research consisted of 148 secondary school students studying in 4 secondary schools in the central district of Niğde province in the 2021-2022 academic year. Interviews were conducted with these 148 students determined by convenience sampling method. Convenience sampling (also known as Random Sampling or Random Sampling) is a type of non-probability or non-random sampling in which participants who meet certain practical criteria such as easy accessibility, geographical proximity, availability at a certain time, or willingness to participate (Dörnyei, 2007). In this sampling type, the researcher conducts his/her study by reaching easily accessible individuals in accordance with the purpose of the study (Etikan, Musa & Alkassim, 2016). In this study, the researcher conducted interviews with the students in the sample group whom he could reach and who were willing to participate in the interviews. The demographic characteristics of the interviewed students are given in Table 1.

Table 1. Demographic Characteristics of Students

Variable	Category	f	%
Gender	Girl	120	81,1
	Boy	28	18,9
Grade Level	5th Grade	4	2,7
	6th Grade	34	23,0
	7th Grade	33	22,3
	8th Grade	77	52,0
Own Device	Yes	76	51,4
	No	72	48,6
Web Usage Purposes	Education and İnformation	125	43,6
	Social Media	73	25,4
	Game	52	18,1
	Others	37	12,9

As seen in Table 1, 120 of the students in the study group were female and 28 were male. When the grade levels of the students are analysed, 4 of them are 5th grade students, 34 of them are 6th grade students, 33 of them are 7th grade students, and 77 of them are 8th grade students. When the students' own devices are analysed, it is seen that 76 of them have their own devices, but 72 of them do not have their own devices. When the internet usage purposes of the students are analysed, it is seen that 125 people use the internet for education and information, 73 people use it for social media, 52 people use it for playing games and 37 people use it for other purposes.

Data collection tool

The data that will constitute the content of the research were obtained through a personal information form and a semi-structured interview form. The interview form was determined by analysing the literature on the subject and obtaining the necessary permissions. In the study, the interview form prepared by Öztürk (2021) was used to determine students' views on the mathematics course given through distance education. Öztürk (2021) prepared a semi-structured interview form consisting of 7 open-ended questions in order to determine students' views on the science course given through distance education. In the process of preparing the interview form,

the researcher consulted expert opinion after preparing the interview questions. In line with the feedback obtained, the interview form was organised and a pilot study was conducted. In this study, the questions in the related form were used to determine the students' views on the mathematics course given through distance education. By attending appropriate classes in schools. The interview form was administered to the students one-to-one in the classroom environment. Each student was given approximately 10 minutes. After the data collection process was completed, the data obtained were analysed, tabulated and interpreted.

Validity reliability

To calculate the reliability of the data, the percentage formula [Similar Opinion ÷ (Similar Opinion + Different Opinion) × 100] was used (Miles & Huberman, 1994). The calculated percentage of agreement was found to be 90%. In this way, it was concluded that our interview form would be reliable.

Data collection and analysis

Content analysis method was used to analyse qualitative data. In this process, the data obtained from the interviews were transferred to the computer environment and deciphered. Content analysis can be expressed as a technique of analysing consistencies, meanings and significant differences by taking qualitative materials. The basic meanings found through content analysis can be called patterns or themes (Patton, 2014). This technique involves systematically developing categories, themes and codes using words or phrases that represent the essence of the content in a text (Büyüköztürk et al., 2019). The main purpose of content analysis is to identify the concepts that can clarify the data and the relationships between these concepts in order to clarify the interview results (Yıldırım & Şimşek, 2018). In addition, content analysis includes the stages of organising, classifying, comparing and drawing theoretical conclusions from the texts (Cohen et al., 2007). In this study, the data obtained from the student interviews were carefully read and analysed, and themes and categories were determined. The students' responses to each question were sorted according to these themes and their frequencies were calculated, and the findings were then defined and interpreted. The themes and categories were reviewed by an expert in the field of curriculum and instruction to check their appropriateness and to reach a consensus. In this study, the data obtained from student interviews were carefully read and analysed. Student names were not given explicitly and coded as S1, S2, S3, ..., S148.

FINDINGS

Students' opinions on how mathematics courses given by distance education should be

The students were asked how the mathematics courses given by distance education should be. Accordingly, the frequency table created by categorising the opinions of the students is shown in Table 2.

Table 2. Students' Views on How Mathematics Lessons Should Be

Themes	%	Codes	f	%
Teacher, Student and Lesson	89,1	Attractive and entertaining	45	25,7
		Course duration or number of courses should be increased	24	13,7
		Those who want the course to be face-to-face	14	8,0
		Subject expression should be increased	30	17,1
		Question solution should be increased	25	14,3
		Individual or in groups	2	1,1
		Those who want it to be student-centred	9	5,2
		Those in favour of maintaining the status quo	7	4,0
Reproach and Technology	10,9	Those who want to create more communication	8	4,6
		Those who want the system to be more functional	11	6,3
Total	100		175	100

As can be seen in Table 2, students were divided into two themes as teacher, student and course (89.1%) and system and technology (10.9%). The theme of teacher, student and course was divided into eight codes, while the theme of system and technology was divided into two codes. 25,7% of the students think that the lessons should be more attractive, fun, game-oriented and visual content should be increased. Apart from this, 13,7% of the students wanted to increase the duration and number of lessons, 17,1% of the students stated that lectures or question solutions should be increased, and 14,3% of the students stated that question solutions should be increased.

Some of the students' opinions who want distance education mathematics lessons to be more attractive, fun, game-oriented and more visual content are as follows:

(Ö-1): *"There should be more activities and games in the computer environment, and the lessons should be more entertaining."*
(Ö-2): *"There should be more attention-grabbing and in-class educational games."*
(Ö-3): *"It should be made more fun with activities and reinforce what we have learnt with games."*
(Ö-4): *"There should be more activity and some play in front of the computer."*
(Ö-6): *"Our teacher has already explained it well enough. In addition, maths activities can be done in computer environment, maths games can be played."*
(Ö-30): *"It can be explained with more attractive and instructive games."*
(Ö-40): *"I used to give online tests."*
(Ö-41): *"I think it could be more fun. It could be more visual."*
(Ö-91): *"There could be more fun and interesting activities with plenty of games."*
(Ö-94): *"More fun tactics and ways should be developed for us to understand the subjects better."*
(Ö-100): *"Different question styles should be shown and the subject should be visual-oriented. Videos with lectures should be emphasised. I think more homework should be given than question banks."*
Some of the students who think that the course duration or the number of courses of mathematics courses given by distance education should be increased are as follows:

(Ö-5): *"Lesson times can be extended, lessons should be supported with videos, online tests can be solved."*

(Ö-19): *"It should be done every day and extra lessons should be included."*

(Ö-38): *"The duration of maths lessons should be increased."*

(Ö-39): *"Main subjects should be increased and other subjects should be cancelled."*

(Ö-42): *"In distance education, I think there should be more maths lessons and it should be fun, we would understand the subject more easily."*

(Ö-45): *"The duration should have been too long, the pens should have been of better quality, that is, they should have written well."*

(Ö-93): *"Lesson time could be more; maths lessons could be two hours a day."*

Some of the student opinions who think that the lectures should be increased in mathematics courses given by distance education are as follows:

(Ö-13): *"Subject expression should be done instead of solving questions."*

(Ö-15): *"Subject expression should be orientated."*

(Ö-21): *"There should be many examples, the subject should be explained a lot."*

(Ö-29): *"Emphasis should be placed on subject expression instead of solving questions."*

(Ö-87): *"There should be more lectures on the subject, usually questions are solved."*

(Ö-133): *"The lecturing should be a little more and the new generation questions should be emphasised and the number of lessons should be kept a little more."*

Some student opinions who think that question solutions should be increased in mathematics courses given by distance education are as follows:

(Ö-56): *"There should be more question solving instead of lecturing. There should be more interaction between the teacher and students."*

(Ö-63): *"The question should be solution-orientated and fun because it is better to consolidate the subject."*

(Ö-65): *"More question solution oriented."*

(Ö-68): *"The lessons would be more understandable if the questions and the teacher's energy were more entertaining and fun."*

(Ö-69): *"Question solving should be emphasised. Activities should be remarkable. Questions should be shorter. Lessons should be longer."*

(Ö-74): *"Question solution weighted. Because the question solution is necessary for us."*

Students' Opinions on the problems they encountered in distance education mathematics courses

It was aimed to learn the problems encountered by the students in the given mathematics courses. Accordingly, the question "How do you think distance education and mathematics courses should be?" was asked to the students and Table 3 was formed with the data obtained from the students.

Table 3. Students' Opinions on the Problems They Encountered in Distance Education Mathematics Courses

Themes	%	Codes	f	%
Reproach and Technology	84	Technological deficiencies and systemic problems	107	77,5
		Problems related to lack of communication	9	6,5
Teacher, Student and Lesson	16	Problems arising from the teacher	9	6,5
		Problems related to the under-representation of topics	2	1,5
		Problems with attention deficit and distraction	4	2,9
		Those who think there is no problem	7	5,1
Total	100		138	100

As seen in Table 3, the problems encountered by students in mathematics lessons were divided into two themes: system and technology (84%) and teacher, student and course (16%). There were two codes in the system and technology theme and four codes in the teacher, student and course theme. 77.5% of the students have problems due to technological deficiencies or systemic problems. The rate of students who think that there are no problems is 5.1%. Apart from this, students expressed that they had problems with communication problems (6,5%), teacher-related problems (6,5%), lack of attention (2,9%), and problems related to the under-teaching of subjects (1,5%).

Some student opinions about technological deficiencies and systemic problems in distance education courses are as follows:

(Ö-5): *"Sometimes my teacher's screen would freeze. At that time, I didn't understand much of what was being said."*

(Ö-7): *"I couldn't do four operations."*

(Ö-10): *"System failures, systemic problems."*

(Ö-12): *"I had a connection and device problem."*

(Ö-13): *"I had general internet problems in all courses."*

(Ö-15): *"Not hearing the teacher's voice. The screen goes away."*

(Ö-17): *"Questions and topics did not seem clear."*

(Ö-18): *"I could not do my operations while solving questions."*

(Ö-19): *"The questions sounded too small."*

(Ö-30): *"I couldn't do four operations on the screen."*

(Ö-32): *"Eba beats, the sound does not go, the teacher does not receive."*

(Ö-45): *"I didn't understand and my voice wasn't going, the teacher's voice wasn't coming."*

(Ö-49): *"I usually couldn't attend classes because the phone was out of battery. The phone was my mum's phone, so I couldn't use it when she had work to do."*

(Ö-50): *"Sometimes my voice did not go to the teacher, theirs may not come, communication was poor at those points."*

(Ö-51): *"Sometimes the sound did not go out, sometimes the pen did not come out at the bottom, the question was blurred."*

(Ö-53): *"I could not solve the question comfortably on the device. But I solve it comfortably face to face on the board."*

(Ö-60): *"I was having trouble writing a reply."*

(Ö-62): *"The question does not appear, the question sometimes does not come and everyone keeps shouting, I cannot give the answer and the sound goes away."*

(Ö-66): *"There was no screen, sometimes there was no sound. Or we couldn't switch on the sound when we wanted to."*

(Ö-70): *"I cannot solve the questions on the phone, the screen is not clear, the teacher does not give the right to speak."*

(Ö-73): *"The question was not being solved efficiently. The screen freezes and is not fully visible. Sometimes the sound was not heard clearly. I could not show the questions I could not solve to the teacher."*

(Ö-81): *"I could not solve the question, the screen was not clear, I did not understand the questions, the voice sounded like a robot, I could not send questions when I wanted."*

(Ö-82): *"I could not send questions to my teacher when I wanted, I could not attend the live lesson because there was no internet signal in the village."*

(Ö-83): *"I couldn't solve the question, I didn't understand, the screen was gone, the sound was gone, sometimes my voice was not heard, I couldn't enter, when I entered, zoom was throwing me again. I couldn't ask a question to my teacher when I wanted to."*

(Ö-94): *"I couldn't hear my voice and the screen kept freezing, so I couldn't understand what I didn't understand and I missed some parts."*

(Ö-101): *"Not using a pencil while solving the question, interruption of my voice, distraction of my attention when I am not with my friends, that is, I cannot pay attention in the classroom environment."*

(Ö-106): *"Sometimes I couldn't hear my teacher and the app kept kicking me out of class."*

(Ö-144): *"The system threw the system, my voice did not go. In addition, I could not understand the subject in live lessons, so I could not get up for the questions. In the room and tablet, computer etc. affected me badly because it was very distracting."*

Students' opinions on solution suggestions for the problems they experience in distance education mathematics courses

It was aimed to determine whether the students had solution suggestions for the problems stated by the students and what these suggestions were. The students were asked the question "What are your suggestions for solutions to the problems you mentioned above?". The findings obtained as a result of student opinions are shown in Table 4.

Table 4. Students' Opinions on Solution Suggestions for the Problems They Experience in Distance Education Mathematics Courses

Themes	%	Codes	f	%
Reproach and Technology	72,3	Internet and technological infrastructure should be available	67	38,7
		System and application must be updated	56	32,4
		Common access should increase	1	0,6
		Internet use should be raised awareness	1	0,6
Teacher, Student and Lesson	27,7	Classes should be face-to-face	28	16,2
		Course designs must change	19	10,9
		Make-up trainings should be organised	1	0,6
Total	100		173	100

As seen in Table 4, students' solution suggestions for the problems they experienced were divided into two as system and technology theme (72.3%) and teacher, student and course theme (27.7%). There were four codes in the system and technology theme and three codes in the teacher, student and course theme. 38,7% of the students think that technological opportunities should be provided to every student. However, 32,4% of the students stated that the system should be updated, improved or changed.

Some of the students who think that internet, device and technological infrastructure should be provided as a solution suggestion for the problems encountered in distance education courses are as follows:

(Ö-1): *"Technological facilities such as tablets and computers should be provided to all students, and each student should be provided with an internet package."*

(Ö-3): *"Internet infrastructure should be more robust and technological opportunities should be provided to everyone so that we are not excluded from the lessons."*

(Ö-4): *"Necessary technological facilities should be provided for each student and everyone should benefit equally."*

(Ö-6): *"All students should be provided with sufficient opportunities to participate in distance education. Connection problems should be eliminated."*

(Ö-22): *"Each student has a technological infrastructure."*

(Ö-39): *"Tablet distribution should have been more frequent and timelier."*

(Ö-55): *"When there is an internet problem in distance education. But I want everyone to have a regular lesson."*

(Ö-66): *"There should be internet solutions, the system should be developed a little more, main courses should be face-to-face, intermediate courses should be online."*

(Ö-69): *"Ensuring technology equality. Digital is face-to-face and verbal is remote. Not interrupting the infrastructure."*

(Ö-76): *"There should be internet equality with tablets etc."*

(Ö-77): *"Technological equality needs to be ensured, the website needs to be secured and the network connection needs to be strengthened, and finally the teaching hours need to be organised."*

(Ö-79): *"All students should be provided with technological equality and basic courses should be taught face-to-face."*

(Ö-87): *"I think that there should be technological competence."*

(Ö-90): *"There should have been an auxiliary device such as a tablet for everyone, not just some students. In addition, since there is generally a shortage of internet, the internet infrastructure should be improved."*

(Ö-99): *"Technological equipment and infrastructure service should be equal for everyone. And it should be distributed to everyone, i.e., to those who do not have technological equipment. (But everyone)"*

(Ö-106): *"I think there should be internet in all homes. Tools such as mobile phones and tablets should be given to every student."*

(Ö-114): *"Technological infrastructure should be provided."*

(Ö-130): *"I would like everyone to have internet for all students."*

(Ö-145): *"High quality tools can be given to every student and teacher. Eba can be updated and freezes can be solved. Apart from that, there is no problem with the narration."*

Some of the students who think that there should be a system and application change as a solution suggestion for the problems encountered in distance education courses are as follows:

(Ö-14): *"Use more useful applications and tools."*

(Ö-16): *"The system should be corrected; internet should be free."*

(Ö-33): *"I think the infrastructure of Eba should be good."*

(Ö-38): *"Conducting lessons on an easier platform."*

(Ö-43): *"The infrastructure of the Eba system could have been organised and tablets could have been given to everyone, they should have been given to those in need."*

(Ö-50): *"The system should be more advanced, internet infrastructures should be available, etc. there may be solution suggestions."*

(Ö-54): *"Eba may expand its scope and may not give warnings such as hail."*

(Ö-56): *"Correction to avoid sound problems. Develop a different system for interaction."*

(Ö-57): *"A more convenient system should be used."*

(Ö-61): *"Establishing a more useful system."*

(Ö-81): *"There could be a new application, internet could be given to everyone, those who do not have a technological device could be given a phone or tablet."*

(Ö-84): *"Further development of the applications is necessary."*

(Ö-91): *"Since Eba did not remove it, a 2nd system could be opened or renewed."*

(Ö-96): *"The system was beating during the lesson. Making the system more active."*

(Ö-100): *"Systems should be improved. The sites where we study should be free of charge (morpa and okulistik). More fun lessons should be taught."*

(Ö-119): *"There should have been a system that could communicate with everyone freely."*

CONCLUSION and DISCUSSION

The students were asked about their suggestions for the mathematics courses given in the distance education system. The students' opinions on increasing attention-grabbing, entertaining and visual contents, more lectures, increasing question solving and increasing the course duration or course hours come to the forefront. In this

case, it was concluded that students found various elements of the learning-teaching process inadequate. Content is one of the most important elements in the distance education system (Telli Yamamoto & Altun, 2020). In the study conducted by Şen (2021), pre-service teachers stated that they found the mathematics course content broadcast on TV positive. However, pre-service teachers suggested that the content of TRT EBA TV mathematics course programmes should be enriched with intelligence questions, animations, videos, activities, etc. In another study, it was stated that a well-designed online course content is an advantage for students, and it was emphasised that not preparing the content well, especially for the mathematics course, may cause problems (Akdemir, 2011). Durmuşçelebi & Temircan (2017) also stated that the mathematics course contents on the EBA platform should be enriched and the contents should be organised to serve different levels. Özdemir, Alaybeyoğlu & Balbal (2017) emphasised that content should be prepared in accordance with the interests and needs of students. In this study, student opinions were obtained in the direction of preparing an interesting and visually richer content. Timur et al. (2017) found that students had opinions such as developing and enriching the content of EBA, preparing a more attractive web page and home page, placing interactive games (knowledge competitions) within the site, and correcting technical problems immediately.

When the opinions of the students about the problems they encountered during the mathematics course taught by distance education were examined, most of the students stated that they had problems due to technological deficiencies or systemic problems. However, technological deficiencies constitute a major problem for students in the distance learning system and prevent the process from being carried out in an effective and healthy way. Therefore, it becomes difficult for students to reach the determined learning outcomes in distance learning environments. It is critical that all students have access to the internet by eliminating these problems. In the research, 7 students stated that they did not experience any problems. In this case, it can be concluded that students' family structure or income levels are also determinant in terms of distance learning system. Polat & Baysal (2022) found that students had problems with internet access and connection problems at home. In most studies (Bringula et al., 2021; Sönmezkale et al., 2022; Malkamak, 2013), it has been determined that students experience technology and infrastructure-related problems.

Finally, the students were asked about their suggestions for solutions to the problems they mentioned. The students expressed their suggestions in terms of providing internet, device and technological infrastructure; making updates or changes in the system and application; making the lessons face-to-face and changing the course designs. In this case, students are also aware of the negative impact of technology-related problems on the learning process and think that the process will be more effective by eliminating this problem. Ülger (2021) stated in his study that it would be useful to make digital tools and systems more useful and to make teaching approaches suitable for distance education today. Most studies (Erzen & Ceylan, 2020; Arslan & Şumuer, 2020; Akıncı & Tunç, 2021) have argued that there should be a strong technological infrastructure. However, the fact that some students want to study with face-to-face education may be due to their inability to get used to the distance education system, the problems they experience in the process and their negative thoughts about the distance education system due to these. Students' perception towards distance learning is very important

because students' negative perceptions of the distance education system cause their motivation to decrease and permanence in learning to decrease. In this case, the problems experienced by the students in the process can be eliminated and their positive perceptions towards the distance learning system can be improved. As a result, students can be more successful in distance learning environments by ensuring that they are more successful and motivated at a higher level.

In summary, the results aimed to reveal the students' views on distance education in detail. As a result of the interviews with the participants, various results were obtained. According to the results, one of the biggest problems encountered in the distance education process is that students experience problems due to technological deficiencies. Especially internet connection problem, technology compatibility and limited access are among the main factors affecting the quality of education of students. Students made suggestions such as making the contents more interesting and visual, increasing the lectures and extending the course duration. Finally, among the solution suggestions of the students are the provision of internet, device and technological infrastructure, updates or changes in systems and applications, face-to-face courses and changing course designs. As a result, this study revealed students' views on distance education and identified the strengths and weaknesses of the system. When the results and related literature are analysed, positive results and benefits are mentioned in the studies on EBA before 2020. However, with the addition of distance education, the results that EBA is negative and needs to be improved come to the fore in the studies. The distance education process can be made more effective and efficient by taking measures such as increasing student participation, enriching content and improving technological infrastructure.

SUGGESTIONS

In line with the results obtained, the following suggestions are presented.

- The content of platforms such as EBA for primary school level can be enriched for students to reinforce what they have learnt.
- In order to ensure the effective participation of students in the distance education process, the factors affecting students' participation in the course should be minimised.
- Technological infrastructure systems should be strengthened so that students can benefit from distance education applications at the highest level.
- This study examined the views of secondary school students on distance education applications within the scope of mathematics course. In further applications, students' views on distance education can be analysed in terms of different courses.
- This study was conducted with secondary school students. In future studies, similar studies can be conducted with students at different levels and the findings obtained can be compared.
- Student opinions were included in this study. In future studies, student, teacher and parent views can be considered together.

- The research was conducted using qualitative method. In future studies, the effectiveness of the distance education system can be tested by conducting experimental studies.
- This study was conducted in a public secondary school and a similar study can be conducted in private schools and the results can be compared.

ETHICAL TEXT

In this article, journal writing rules, publication principles, research and publication ethics rules, journal ethics rules have been followed. The responsibility for any violations that may arise regarding the article belongs to the author (s). The ethics committee permission of the article was obtained by Niğde Ömer Halisdemir University / Publication Ethics Board with the decision dated 23/11/2021 and numbered 137676.

Author(s) Contribution Rate: This first author contribution rate is 50%, second author contribution rate is 50%.

REFERENCES

Akdemir, Ö. (2011). Yükseköğretimimizde uzaktan eğitim. *Yükseköğretim ve Bilim Dergisi*, (2), 69-71.

Akıncı, M. & Tunç, M. P. (2021). Uzaktan eğitim uygulamalarında matematik öğretmen adaylarının karşılaştıkları sorunlar ve çözüm önerileri. *Ekev Akademi Dergisi*, (85), 359-376.

Arslan, Y. & Şumuer, E. (2020). Covid-19 döneminde sanal sınıflarda öğretmenlerin karşılaştıkları sınıf yönetimi sorunları. *Milli Eğitim Dergisi*, 49(1), 201-230.

Bringula, R., Reguyal, J. J., Tan, D. D. & Ulfa, S. (2021). Mathematics self-concept and challenges of learners in an online learning environment during COVID-19 pandemic. *Smart Learning Environments*, 8(1), 1-23.

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş. & Demirel, F. (2019). *Bilimsel araştırma yöntemleri (26. Baskı).* Ankara: Pegem Akademi.

Cohen, L., Manion, L. & Morrison, K., (2007). *Research methods in education (6th ed.)*. New York, NY: Routledge.

Dörnyei, Z. (2007). *Research methods in applied linguistics*. New York: Oxford University Press.

Durmuşçelebi, M. & Temircan, S. (2017). MEB (Eğitim Bilişim Ağı) EBA'daki eğitim materyallerinin öğrenci görüşlerine göre değerlendirilmesi*. OPUS Uluslararası Toplum Araştırmaları Dergisi*, 7(13), 632-652.

Erzen, E. & Ceylan, M. (2020). Covid-19 salgını ve uzaktan eğitim: uygulamadaki sorunlar. *Ekev Akademi Dergisi*, (84), 229-248.

Etikan, I., Musa, S. A. & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1-4.

Keskin Yorgancı, F. (2019). *Ortaokul matematik öğretmenlerinin eğitim bilişim ağı (EBA) projesinden yararlanma düzeyleri ve proje hakkındaki görüşleri*, Yayımlanmamış Yüksek Lisans Tezi, Van Yüzüncü Yıl Üniversitesi Eğitim Bilimleri Enstitüsü, Van.

Malkamak, G. R. (2023). *Covid-19pandemisi Sürecinde Ortaokul Öğrencilerinin Uzaktan Eğitime İlişkin Görüşleri*, Yayımlanmamış Yüksek Lisans Tezi, Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara.

Miles, M. B. & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. sage.

Özdemir, A., Alaybeyoğlu, A. & Balbal, K. F. (2017). Web tabanlı öğrenme ortamı tasarımı. *Bilim Eğitim Sanat ve Teknoloji Dergisi*, 1(1), 10-18.

Öztürk, S. K. (2021). Covid-19 salgını sürecinde taşımalı öğrencilerin uzaktan eğitim ile verilen fen bilimleri dersine yönelik görüşleri. *OPUS International Journal of Society Researches*, 17 (Pandemi Özel Sayısı), 3892-3917.

Patton, M.Q. (2014). *Qualitative research and evaluation methods integrating theory and practice*. CA: *Sage Publications*.

Polat, H. & Baysal, E. (2021). Ortaokul öğrencilerinin covid-19 salgın sürecinde yürütülen uzaktan matematik öğretimine yönelik görüşlerindeki farklılıkların incelenmesi. *Erzincan Üniversitesi Eğitim Fakültesi Dergisi*, 24(2),136-149.

Sayan, H. (2020). Covid-19 pandemisi sürecinde öğretim elemanlarının uzaktan eğitime ilişkin görüşlerinin değerlendirilmesi. *AJIT-e: Bilişim Teknolojileri Online Dergisi*, 11(42), 100-122.

Sönmezkale, I., Özrecberoğlu, N., Gezercan, Y. S. & Günes, G. C. (2022). Teacher and student opinions on online Mathematics education. *Asian Journal of Contemporary Education*, 6(2), 104-115.

Stake, R. E. (1995). *The art of case study research*. *Sage*.

Şen, O. (2021). *Uzaktan eğitim yoluyla gerçekleştirilen yönetici eğitimi faaliyetlerinin yayılım süreçlerinin incelenmesi,* Yayımlanmamış Yüksek Lisans Tezi. Eskişehir Osmangazi Üniversitesi.

Telli Yamamoto, G. & Altun, D. (2020). Coronavirüs ve çevrimiçi (online) eğitimin önlenemeyen yükselişi. *Üniversite Araştırmaları Dergisi*, 3(1), 25-34.

Timur, B., Yılmaz, Ş. & İşseven, A. (2017). Ortaokul öğrencilerinin eğitim bilişim ağı (EBA) sistemini kullanmalarına yönelik görüşleri. *AsianJournal of Instruction*, 5(1), 44-54.

Ülger, K. (2021). Uzaktan eğitim modelinde karşılaşılan sorunlar-firsatlar ve çözüm önerileri. *Uluslararası Güncel Eğitim Araştırmaları Dergisi*, 7(1), 393-412.

Yedekçioğlu, Ö. (1996). Use of computers at high schools in Turkey. *T.H.E. Journal*, 23(6), 64-69.

Yıldırım, A. & Şimşek, H. (2018). *Sosyal bilimlerde nitel araştırma yöntemleri (11. Baskı)*. Ankara: Seçkin Yayıncılık.

Yin, R.K (1984). *Case Study Research: Design and Methods*. Sage Publications, Beverly Hills, California.