Investigation of Secondary School Students' Opinions on Mathematics Lesson with Distance Education

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Abstract
The aim of this study is to examine the opinions of secondary school students about mathematics lessons taught with distance education. The research was carried out by taking the opinions of 286 secondary school students from one state school selected from each of the provinces (Manisa, İzmir, Muğla, Antalya, Şırnak, Bitlis). Quantitative and descriptive survey method was used in the study.

According to the findings, it was seen that the opinions of female and male students were very close to each other, there was no significant difference according to the variables of the number of siblings and whether they had their own study room, and there was a significant difference between 5th grade students and 8th grade students. Students; It was seen that there was no difference in their views on understanding the lesson better and increasing their success, they did not have any problems in accessing the Mathematics lesson, but they had problems due to internet interruptions during the lesson, they did not have any problems in communicating with their teachers and delivering homework during the lesson, but they still preferred face-to-face education at a high rate.

It was observed that the motivation of the 5th grade students during the lesson and their better understanding of the lesson were higher than the 8th grade students.
Keywords: Distance Education, Mathematics, Internet, Success

INTRODUCTION

Since November-December 2019, the Covid-19 epidemic has always taken the first place on the agenda of all countries. In Turkey, the epidemic and its consequences have been discussed every day since March 11, 2020, the first date of the case. Countries have emphasized that the definitive solution for the epidemic is vaccination, and it has been expressed by the World Health Organization (WHO) that every country must take precautions until a vaccine is found. Among the measures taken, they are the measures that will reduce the activities of people outside their homes, which are considered to be the most important measure by countries. The strictest of these is the curfews implemented under the name of "staying at home".

In all countries; The biggest part of out-of-home activity and street activity is the child and youth group. The mobility of students who have to go to school for five days in some countries and six days in some countries has created a concern that the virus will spread much faster. One of the first decisions taken by countries in the fight against covid-19 is the closure of schools to prevent this great activity. The difficulty of the mathematics course in the face-to-face education process is known by everyone. The number of materials and studies applied for mathematics education in face-to-face education is quite high. The mathematics course, which is difficult to understand even with face-to-face education, has become compulsory in today's epidemic conditions. In the distance education, which has been applied both on EBA TV and over internet providers, which continues until today, mathematics course education is tried to be continued along with other courses. For this reason, it is necessary to examine the views of students for the mathematics course taught with distance education. From this point of view, the general purpose and sub-objectives of the research were established. As of March 2020, until the end of the semester, mathematics education broadcasts were made on EBA TV channels. As of August 31, 2020, education has been tried to be implemented in such a way that education at school on certain days, called

"hybrid education model", will be distance education on certain days. However, due to the increasing number of cases as of September, as of November 16, 2020, the country has completely switched to distance education again. Although different methods have been tried at different times, since March 2020, distance education has been continued over the internet and TV broadcasts in order to continue the education. In the epidemic period, when the whole world switched from pre-school education to university education, research on mathematics education was shaped in line with the new education programs and methods applied. In this study on secondary school students, it is thought that it will contribute to the studies on the evaluation and development of distance education, where sufficient scientific studies have not been done yet, thanks to the examination and evaluation of students' views on distance education and mathematics education.

Teaching Mathematics

Mathematics teaching aims to provide the person with the mathematical knowledge and skills he needs in his life, to develop problem-solving skills and to establish such a way of thinking (Altun, 2018).

The effectiveness of a teaching activity that proceeds in the form of transferring mathematical concepts and systematic information as a whole and then solving exercises is discussed. It is thought that the knowledge that is not assimilated, not confronted with life, and put into practice will not be permanent, so it will not create an enjoyable situation for the learner. For this reason, an approach that aims to blend and present the mathematical concepts and thinking skills that the learners will need throughout their lives, with an understanding far from memorization, in accordance with the nature and philosophy of mathematics should be preferred (Işık, Çiltaş, & Bekdemir, 2008).

Covid-19 Outbreak

The disease, which first appeared in Wuhan, China at the end of December 2019, causing symptoms such as fever, cough, and shortness of breath in infected people; It is the new coronavirus disease. (Ministry of Health, 2020)
The main mode of transmission of COVID-19 is through droplets and contact. Schools are risky in terms of COVID-19 transmission, as they are places where there are public places. (Ministry of Health, 2020)

Distance Learning

Moore (1973) defines distance education as teaching methods in which the communication between the teacher and the learner is facilitated by printed, electronic, mechanical and other means, and the teaching behaviors are separated from the learning behaviors. (Gökmen, Smoke, Horzum,2016)

Concepts such as distance education, distance education, distance learning, simultaneous learning, flexible learning are concepts used to complete an education process where the student and teacher are physically separate.(Gökalp, 2021)

Holmberg (1995) emphasizes that distance education encompasses various forms of study where planning, guidance, teaching is done, students and teachers are not required to be together in places where lectures are held or similar, and the student is not under the control of the teacher. (Gökmen, Smoke, Horzum,2016)

EBA and EBA TV

EBA is a web-based network that offers educational and social content designed by the General Directorate of Innovation and Educational Technologies under the Ministry of National Education.
All teachers and all primary, secondary and high school students in Turkey can access EBA. In order to increase the equality of opportunity, EBA TV broadcasts were started on March 23, 2020, in agreement with TRT, different in primary, secondary and high school levels.

Hybrid Education Model

Hybrid, Coexistence of two different power supplies (Turkish Language Institution).

The hybrid education model is defined as the development of the traditional education method by combining it with online education materials. Courses such as geography, physical education, history, life sciences and art will be distance education. Classes will be divided into two. One group will go to school on Mondays, Wednesdays, and Fridays, while another group will go to school on Tuesdays, Thursdays, and Saturdays." (Selcuk, 2020).

Basaran, M, Dogan, E , Karaoglu, M , Sahin, E . (2020). In his study titled "A Study on the Efficiency of Distance Education as a Result of the Coronavirus (Covid-19) Pandemic Process", it was stated that the case study model, which is a qualitative research method, was used to get the opinions of teachers, students and parents about distance education during the pandemic process, and data were collected with interview forms. .

In the research; “It has been observed that inferences have been made such as the students' inability to actively participate in the lesson, not being suitable for individual differences, problems in entering the lesson due to technical problems, infrastructure problems, lack of materials and not being suitable for equal opportunities.

Arat, T, Minister, O. (2014), in their study titled "Distance Education and Its Applications", emphasized that the technology that has been developing since 1970 has caused changes in the education system in the process and has made a great contribution to the lifelong learning model.

Gokbulut, B. (2021), in the study titled "Distance Education and Mobile Learning from the Perspective of Distance Education Students", it is said that the readiness of students who start distance education for distance education and mobile learning is wanted to be evaluated. It is mentioned that this study was carried out with 358 university students by using the quantitative methods scanning model and the data were collected with two measurement tools.

Boz Yuksekdag, B. (2020), it was stated that the study named “Perceptions Regarding Distance Nursing Education” was conducted with selected nurses working in Eskişehir. It was stated that the project lasted 24 months and different methods and techniques were used. As a result of the studies, it was stated that the perception of nurses in distance education is not high. It was mentioned that there were significant relationships among the different nurse groups. In the study, it was suggested to develop distance education programs and environments to increase nurses' perceptions of distance education. Gul, I, Arabaci, I. (2018), in the study titled “The Views of Graduate Educational Administration Graduate Students Studying with Distance Education”, it was emphasized that distance education is a model that facilitates lifelong learning. It was stated that the interview model was applied as a qualitative research method on 19 graduate students of the study.

As a result of the study, it was stated that the students preferred the program because there was no attendance requirement, and it was seen that the students presented their requests by turning them into suggestions. Kırali, F, Alcı, B. (2016), in the study titled “University Students' Views on the Perception of Distance Education”, it was stated that data were collected on 338 students with a survey model. In the study, no significant difference was found between the variables of gender and internet connection and their perceptions towards distance education, but it was stated that there was a significant difference between owning a personal computer and using the computer during the day and the perception towards distance education. Güngör, H, Çangal, Ö, Demir, T. (2020), it was stated that the study named “Learner and Teacher Views on Distance Education of Turkish as a Foreign Language” was conducted by using an interview form on 30 students and 10 teachers.

Lock, B , Guner, P . (2021), it was stated that the study named “The Opinions of Mathematics Teachers on Web-Based Distance Education in Mathematics Lessons” was conducted with 19 secondary school teachers using a semi-structured interview form. It has been observed that teachers distinguish the positive and negative sides of distance education. While the teachers expressed positive opinions on issues such as being able to deliver content quickly, low cost, and reproducibility, it was stated that the negative aspects were the inability to provide equal opportunities in education, not being able to communicate with the student and not being able to control the student. Özyürek, A , Begde, Z , Yavuz, N , Özkan, İ, “(2016). It was stated that the study named "Evaluation of Distance Education Application According to Student's Perspective" was carried out on 115 vocational school students using the descriptive survey model.

Private Turkuresin, H. (2020), it has been stated that the study named "Examination of Distance Education Applications Conducted During the Covid-19 Pandemic Period in the Context of Pre-service Teachers' Opinions" was carried out by considering different variables. Hairless, C , Grass, V. (2016), it was stated that the study named “Secondary School Students' Opinions on Eba Ders Web Site” was conducted with 181 secondary school students using a semi-structured interview form. It was said that the students' opinions were divided into positive and negative opinions. Kaynar, Kurnaz, Doğrukök, Şentürk Barışık (2020) stated that the study named "Secondary School Students' Views on Distance Education" was conducted with 565 secondary school students with a mixed method design in which qualitative and quantitative research methods were used together. Students; It has been stated that face-to-face education is more beneficial than distance education, that the broadcasts made over EBA TV are insufficient, that they experience problems while accessing the EBA website. Students; It was stated that they did not express a definite opinion about the duration of the course, the continuous continuation of distance education, and the place where the courses were held.

Doğrukök, B, Kurnaz, A, Şentürk Barışık, C, Kaynar, H. (2021), it was stated that the study named “Evaluation of High School Students' Perceptions of Distance Education in terms of Different Variables” was conducted with 402 high school students with a mixed method in which qualitative and quantitative research methods were used

together. In the study, it was stated that private school students and high school senior students had a more positive approach to distance education. Birişçi, S. (2013), it was stated that the study named "Student Attitudes and Views on Video Conferencing-Based Distance Education" was conducted with 41 university students using an attitude scale. Students stated that video conferencing courses provide the opportunity to meet people from different fields. Students are undecided in their attitudes towards distance education; It was stated that internet interruptions prevented communication with the teacher during the lesson.

In the research; Negative aspects of students not being motivated in distance education were also shared. Ranger, A , Pumpkin, K . (2020). In the study titled "Hybrid Learning Practices and Effects in Turkey: A Meta-Analysis Study", it was stated that 30 academic studies on the subject between the years 2015-2020 were selected. In the research, it was stated that the hybrid education model can provide permanence in learning and increases in academic achievement are observed. Tezcan, Uçar (2020) It was stated that the study titled "Establishment of a Web-Based Distance Education System for Mentally Handicapped Children: Application of Mathematics Lesson" was conducted on 20 students with mild mental disabilities in a primary school. It is stated that the students were divided into two homogeneous groups and the first test-post test was applied and their success levels were examined. In the study, it was stated that there was no significant difference between classical learning in the classroom and web-supported distance education in terms of student success when the teacher's condition was met. Based on this result, it has been suggested that repeat courses can be made with web-based distance education.

METHOD

In this section, explanations about the research model, study group, data collection and analysis processes used in the research are given.

Research Model

In the research, descriptive quantitative survey model was used in order to find answers to the general purpose and sub-objectives of the research. This model was preferred to examine students' cognitive and affective views about distance education and mathematics lessons.
The screening model is a model that aims to reveal the current situation or a situation that existed in the past (Karasar, 2018). In this context, a questionnaire was applied to secondary school students.

Purpose of the research

It is aimed to examine the opinions of secondary school students about the mathematics lessons taught in the distance education program, which was started by the Ministry of National Education on EBA TV broadcasts as of March 23, 2020, and on the internet software of EBA and various private companies as of August 31, 2020, due to the Covid-19 epidemic.

Sub-Aims of the Research

1- What are the opinions of secondary school students about the mathematics lesson with distance education?
2- Do the opinions of secondary school students about the distance education mathematics course differ according to their genders (girls, boys)?
3- Do the opinions of secondary school students about the distance education mathematics course differ according to their grades (5th grade, 6th grade, 7th grade, 8th grade)?
4- Do the opinions of secondary school students about the distance education mathematics lesson differ according to the number of siblings (1-2, 3-5, 6 or more)?
5- Do the opinions of secondary school students about the distance education mathematics course differ depending on whether they have their own study rooms or not?

Importance of Research

Mathematics is the most important phenomenon that needs to be learned and interpreted for the development of science and technology. The importance of mathematics education stems from the unlimited need for mathematics itself.

Universe and Sample

The universe of the research; It consists of secondary school students from selected schools from the provinces of Manisa, İzmir, Muğla, Antalya, Şırnak and Bitlis. The students in the selected universe and sample were selected according to easy accessibility. The sample of the study, on the other hand, was formed from randomly selected students in the school by choosing one school from each of the districts of Manisa/Soma, İzmir/Gaziemir, Muğla/Bodrum, Antalya/Alanya, Şırnak/Cizre, Bitlis/Mutki. In the sample, there are 286 students randomly selected from public schools in the mentioned districts.

Table 1 Population, Sampling Frequency and Percentages

	FREQUENCY	PERCENTAGE
Girl	148	51,7
Male	138	48,3
5th grade	63	22,0
6th grade	49	17,1
7th grade	79	27,6
8th grade	95	33,2
1-2 siblings	182	63,6
3-5 siblings	85	29,7
6 Or More	19	6,6
I Have My Own Study Room	208	72,7
I Don't Have My Own Study Room	78	27,3
Total	286	100,0

According to Table 1, among the students whose opinions were evaluated in the questionnaire; The percentage of female students is 51.7% (148 people), while the percentage of male students is 48.3% (138 people). Students; 22% (63 people) are 5th grade students, 17.1% (49 people) are 6th grade students, 27.6% (79 people) are 7th grade students, 33.2% (95 people) is an 8th grade student. Students; 63.6% (182 people) have 1-2 siblings, 29.7% (85 people) have 3-5 siblings, 6.6% (19 people) have 6 or more siblings. From students; 72.7% (208 people) have their own study rooms. 27.3% (78 people) do not have their own study room.

Data Collection Tools

In accordance with the general purpose and sub-objectives of the research, the scale developed by the researchers was prepared for the students to examine the opinions of secondary school students about the mathematics course with distance education. Alpha reliability of the prepared scale was 0.86. For the validity of the scale, the opinions of 3 experts from the field were taken, the factor analysis of the scale was made, the unsuitable items were removed from the scale and it was decided to apply it by transforming it into its current form. In order to divide the research into sub-objectives, there are 4 questions in the previous personal information section of the scale (gender, class, number of siblings, own study room). 19 questions were prepared in order to examine the cognitive and affective views of the students about the distance education mathematics lesson. A four-point Likert type (Strongly Agree, Agree, Disagree, Strongly Disagree) was applied for 19 items. “Scale” has been prepared in a web-based (Google Form) environment due to pandemic conditions and easy accessibility. The scale, which was prepared in the web environment, was first conveyed to the teachers. The teachers in the selected provinces conveyed the scale to their students via web services.

Data Collection

After the web-based scale to be applied for the research to be carried out was shared with the selected teachers in the selected provinces, the scale was shared and applied with the students over the web base. The scale was left open to be answered for two days. The answers of the scale completed by each student are automatically recorded in the system of the web-based service (Google Form). After the completion of the scale filling period, the data were transferred to the computer as a file in the web environment. The information transferred to the computer environment was evaluated.

Analysis of Data

Statistical data were calculated for the frequency, percentage values and analysis of the quantitative data of the study. Quantitative calculations were made with the Statistical Package for Social Sciences 2017 (SPSS) software. T-Test and Analysis of Variance were performed for the data.

The data obtained with the SPSS program were converted into tables and graphics so that the sub-objectives of the research could be interpreted more easily. Separate calculations were made for each sub-objective of the study. Likert options on the program; It was coded as “Strongly Agree=4, Agree=3, Disagree=2, Strongly Disagree=1”. Among the 290 secondary school students who returned to the scale, the answers of 286 students were found to be evaluable. The rate of evaluation of students who returned to the scale is 98.6%.

RESULTS

In this section, the findings related to the sub-objectives of the research are given.

Findings of the First Sub-Aim

What are the opinions of secondary school students about the Mathematics lesson with distance education? This section contains the findings of the first sub-goal.

Table .2 Percentage and Frequency of Students' Opinions on Distance Education

		ABSOLUTELY I AGREE	I AGREE	I DO NOT AGREE	I STRONGLY DISAGREE
1. In the distance education mathematics lesson, I have problems during the lesson due to internet connection problems.	**N**	70	112	76	28
	%	24,5	39,2	26,6	9,8
2. I can access the lessons in the distance education mathematics lesson.	**N**	94	136	43	13
	%	32,9	47,6	15,0	4,5
3. I started to understand the mathematics lesson better in the mathematics lesson with distance education.	**N**	31	53	124	78
	%	10,8	18,5	43,4	27,3
4. My motivation is high in the distance education mathematics course.	**N**	40	93	105	48
	%	14,0	32,5	36,7	16,8
5. Mathematics subjects are processed faster in distance education mathematics lessons.	**N**	38	136	82	30
	%	13,3	47,6	28,7	10,5
6. In the distance education mathematics lesson, I can see more mathematics questions during the lesson.	**N**	55	132	76	23
	%	19,2	46,2	26,6	8,0
7. After the transition to distance education, my math performance increased.	**N**	24	49	127	86
	%	8,4	17,1	44,4	30,1
8. After switching to distance education, my interest in mathematics did not change.	**N**	51	122	84	29
	%	17,8	42,7	29,4	10,1
9. After switching to distance education, my interest in mathematics did not change.	**N**	28	80	127	51
	%	9,8	28,0	44,4	17,8
10. I still prefer distance education if there is a face-to-face education opportunity.	**N**	17	24	79	166
	%	5,9	8,4	27,6	58,0
11.Uzaktan eğitimle yapılan matematik dersinde daha fazla özen gösteriyorum.	**N**	37	116	96	37
	%	12,9	40,6	33,6	12,9
12. I have trouble presenting math homework to the teacher in the distance education math lesson.	**N**	35	57	137	57
	%	12,2	19,9	47,9	19,9
13. In the distance education mathematics lesson, the subjects stay in my mind more.	**N**	21	43	134	88
	%	7,3	15,0	46,9	30,8
14. In the distance education mathematics lesson, I get distracted while listening to the lesson.	**N**	70	127	54	35
	%	24,5	44,4	18,9	12,2
15. In the distance education mathematics lesson, I can easily communicate with the teacher during the lesson.	**N**	75	124	54	33
	%	26,2	43,4	18,9	11,5
16. I can think faster while looking at the screen (computer, phone, tablet, etc.) during the distance education mathematics lesson.	**N**	21	76	125	64
	%	7,3	26,6	43,7	22,4
17. After the distance education started, I like the math class more.	**N**	21	58	124	124
	%	7,3	20,3	43,4	29,0
18. If each student is given a computer or tablet for the distance education mathematics lesson, the mathematics lesson will be more efficient.	**N**	122	114	38	12
	%	42,7	39,9	13,3	4,2
19. Distance education is more effective than face-to-face education.	**N**	16	12	88	170
	%	5,6	4,2	30,8	59,4

According to Table 2, “I have problems during the course due to internet connection problems in the distance education mathematics course.” Percentage of those who said "Strongly Agree" to the item 24.5% (70 people), Percentage of those who said "I agree" 39.2% (112 people), Percentage of those who said "I do not agree" 26.6% (76 people), Percentage of those who said "Strongly Disagree" 9.8% (28 people).

“I can access the lessons in the distance education mathematics course.” Percentage of those who said "Strongly Agree" to the item 32.9% (94 people), percent of those who said "I agree" 47.6% (136 people), Percentage of those who said "I do not agree" 15% (43 people), Percentage of those who said "Strongly Disagree" 4% ,5 (13 people). “I started to understand the mathematics lesson better in the mathematics lesson with distance education.” Percentage of those who said “Strongly Agree” 10.8% (31 people), Percentage of those who said “I agree” 18.5% (53 people), Percentage of those who said “I do not agree” 43.4% (124 people), Percentage of those who said “Strongly Disagree” 27.3% (79 people). “I still prefer distance education if there is a face-to-face education opportunity.” The percentage of those who said “Strongly Agree” to the item 5.9% (17 people), the percentage of those who said “I agree” 8.4% (24 people), the percentage of those who said “I do not agree” 27.6% (79 people), the percentage of those who said “Strongly Disagree” It is 58%. (166 people). “My motivation is high in the distance education mathematics course.” The percentage of those who say “Strongly Agree” to the item 14% (40 people), the percentage of those who say “I agree” 32.5% (93 people), the percentage of those who say “I do not agree” 36.7% (105 people), the percentage of those who say “I strongly disagree” 16% ,8 (48 people). “Mathematics subjects are processed faster in distance education mathematics lessons.” Percentage of those who said "Strongly Agree" to the item 13.3% (38 people), percent of those who said "I agree" 47.6% (136 people), Percentage of those who said "I do not agree" 28.7% (82 people), Percentage of those who said "Strongly Disagree" 10.5% (30 people). “In the distance education math course, I can see more math questions during the course.” Percentage of those who said “Strongly Agree” 19.2% (55 people), Percentage of those who said “I agree” 46.2% (132 people), Percentage of those who said “I do not agree” 26.6% (76 people), Percentage of those who said “Strongly Disagree” 8% (23 people). “After transitioning to distance education, my math success increased.” The percentage of those who said “Strongly Agree” to the item 8.4% (24 people), the percentage of those who said “I agree” 17.1% (49 people), the percentage of those who said “I do not agree” 44.4% (127 people), the percentage of those who said “Strongly Disagree” 30.1% (86 people). “My interest in mathematics did not change after I switched to distance education.” The percentage of those who said "Strongly Agree" to the item 17.8% (51 people), the percentage of those who said "I agree" 42.7% (122 people), the percentage of those who said "I do not agree" 29.4% (84 people), the percentage of those who said "I strongly disagree" 10.1% (29 people). “I take more mathematics courses in distance education than other courses.” The percentage of those who said "Strongly Agree" to the item 9.8% (28 people), the percentage of those who said "I agree" 28% (80 people), the percentage of those who said "I do not agree" 44.4% (127 people), the percentage of those who said "I strongly disagree" 17% ,8 (51 people). “I pay more attention in the mathematics lesson with distance education.” Percentage of those who said “Strongly Agree” to the item 12.9% (37 people), Percentage of those who said “I agree” 40.6% (116 people), Percentage of those who said “I do not agree” 33.6% (96 people), Percentage of those who said “Strongly Disagree” 12.9% (37 people). “I have trouble presenting math homework to the teacher in the distance education math class.” Percentage of those who said “Strongly Agree” 12.2% (35 people), Percentage of those who said “I agree” 19.9% (57 people), Percentage of those who said “I do not agree” 47.9% (137 people), Percentage of those who said “Strongly Disagree” 19.9% (57 people). “In the distance education mathematics course, the topics stay in my mind more.” The percentage of those who say “Strongly Agree” to the item 7.3% (21 people), the percentage of those who say “I agree” 15% (43 people), the percentage of those who say “I do not agree” 46.9% (134 people), the percentage of those who say “Strongly Disagree” 30% ,8 (88 people). “In the distance education math lesson, I get distracted while listening to the lesson.” Percentage of those who said "Strongly Agree" to the item 24.5% (70 people), percent of those who said "I agree" 44.4% (127 people), Percentage of those who said "I do not agree" 18.9% (54 people), Percentage of those who said "Strongly Disagree" 12.2% (35 people). “In the distance education mathematics lesson, I can easily communicate with the teacher during the lesson.” Percentage of those who said "Strongly Agree" to the item 26.2% (75 people), Percentage of those who said "I agree" 43.4% (124 people), Percentage of those who said "I do not agree" 18.9% (54 people), Percentage of those who said "Strongly Disagree" 11.5% (33 people). “I can think faster while looking at the screen (computer, phone, tablet, etc.) during the distance education math lesson.” Percentage of those who said "Strongly Agree" to the item 7.3% (21 people), percent of those who said "I agree" 26.6% (76 people), Percentage of those who said "I do not agree" 43.7% (125 people), Percentage of those who said "Strongly Disagree" It is 22.4% (64 people). “I like math more after distance education starts.” The percentage of those who said "Strongly Agree" to the item 7.3% (21 people), the percentage of those who said "I agree" 20.3% (58 people), the percentage of those who said "I do not agree" 43.4% (124 people), the percentage of those who said "I strongly disagree" It is 29% (83 people). “If each student is given a computer or tablet for the distance education mathematics lesson, the mathematics lesson will be more efficient.” The percentage of those who said “Strongly Agree” to the item 42.7% (122 people), the percentage of those who

said “I agree” 39.9% (114 people), the percentage of those who said “I do not agree” 13.3% (38 people), The percentage of those who said “Strongly Disagree” 4.2% (12 people). “Distance education is more effective than face-to-face education.” The percentage of those who say “Strongly Agree” to the item 5.6% (16 people), the percentage of those who say “I agree” 4.2% (12 people), the percentage of those who say “I do not agree” 30.8% (88 people), the percentage of those who say “Strongly Disagree” 59.4% (170 people).

Findings of the Second Sub-Aim

Do secondary school students' views on mathematics course with distance education differ according to their genders (girls, boys)?

Table 3. T-test results on whether there is a difference in the opinions of male and female students in the sample about mathematics courses in distance education

Students	**N**	**X**	**D.F**	**t**	**Severity Level**
Girl	148	46,1149	284	,475	,726
Boy	138	45,7101	283,709		

F.D..=284

According to the data in Table 3, there was no significant difference between the thoughts of girls and boys according to the results of the t-test on whether there is a difference in the thoughts of the students about the distance education mathematics lessons. (t 475, P>.05 .726). (Girl: X: 46.11, Boy X: 45.7)

Findings of the Third Sub-Aim

Do secondary school students' opinions about distance education mathematics lesson differ according to their grades (5th grade, 6th grade, 7th grade, 8th grade)?

This section contains the findings of the third sub-goal.

Table 4. The results of the ANOVA test on whether there is a difference in the opinions of the students according to the classes they are in.

	Sum of Squares	Fd	Mean Square	F	P
Between groups	480,769	3	160,256	3,177	,025
Within groups	14224,382	282	50,441		
Total	14705,150	285			

According to Table 4, the significance value between the classes is sig<0.05 (significant differentiation)

According to the results of the ANOVA test, it was observed that there was a significant difference between the classes, since the significance value was Sig.<.05.

Table 5. LSD test on whether there is a difference in the opinions of the students according to the classes they are in.

(I) Class	(J) Class	Sig.
5th. Class	6th. Class	,052
	7th. Class	,125
	8th. Class	,002
6th. Class	5th. Class	,052
	7th.Class	,540
8. Sınıf		,410
7th. Class	5th. Class	,125
	6th. Class	,540
	8th. Class	,093
8th. Class	5th. Class	,002
	6th.Class	,410
7. Sınıf		,093

According to Table 5

- Between 5th and 6th grades sig>.05
- Between 5th and 7th grades sig>.05
- sig<.05 (significant differentiation) between 5th grade and 8th grade
- Between 6th and 7th grades sig>.05
- Between 6th grade and 8th grade sig>.05

- Between 7th grade and 8th grade sig>.05

According to the results of the LSD test, the significance value was found to be Sig.<.05 only between the 5th grade and 8th grade students. For this reason, it was observed that there was a significant difference between the views of the 5th grade students and the 8th grade students.

Findings of the Fourth Sub-Aim

Do secondary school students' opinions about distance education mathematics lesson differ according to the number of siblings (1-2, 3-5, 6 or more)?

This section contains the findings of the fourth sub-goal.

Table 6. ANOVA test results on whether students' views change according to the number of siblings"

	Sum of Squares	Fd	Mean Square	F	P
Between groups	122,148	2	61,074	1,185	,307
Within groups	14583,002	283	51,530		
Total	14705,150	285			

According to Table 6, sig.>.05 between the groups according to the number of siblings of the students. According to the obtained ANOVA test results, it was seen that the students' views did not create a significant difference according to the number of siblings, since the significance value was Sig.>.05.

Findings of the Fifth Sub-Aim

Do secondary school students' opinions about the distance education mathematics course differ depending on whether they have their own study rooms or not?

Table 7. T-test results for the difference in the opinions of male and female students in the sample about whether they have their own private study desks for distance education mathematics courses.

Students	**N**	**X**	**F:D**	**t**	**Importance level**
Yes	208	46,28	6,42	,1,402	,142
None	78	44,94	8,87		

F:D =284

According to the data in Table 7, there were no significant differences between the thoughts of girls and boys according to the results of the t-test on whether the students have their own study desks for distance education Mathematics lessons. (t 402, P>.05 .142). (Yes X: 46,24, No X: 44,72)

Discussion, Conclusion and Recommendations

In this section, the results obtained by discussing the research and recommendations are given.

Argument

In the answers given by the students to the survey items; As seen in the research of Kilit, B, Güner, P. (2021), they can access the lessons in distance education mathematics lessons, the lessons can be processed faster and the content can be presented faster, they have the opportunity to see more questions, while presenting (submitting) homework to their teachers and They expressed a predominantly positive opinion that they did not have any problems while communicating with their teachers during the lesson. It was seen that the distribution of positive and negative opinions was close to each other in the answers given to the item stating that the motivation of the students was high while they were teaching with distance education. Students; Güngör, H, Çangal, Ö, Demir, T. (2020) also found that they had problems with the internet during the lesson, as in their research.

In the study carried out by Kaynar, Kurnaz, Doğrukök, Şentürk Barışık (2020), it is predominantly found that students prefer face-to-face education with a high percentage, the efficiency of distance education is low in our country, the lessons cannot be taught effectively and face-to-face education is more effective than distance education. The results show parallelism with the research. Whether the research results differ according to gender is an important sub-objective in the researches. In our country where coeducation is carried out, the difference in the views of male and female students on education is an important issue that should be taken into account in the education programs to be implemented. When examining whether there is a difference in opinions according to gender differences, it is revealed that female students and male students do not increase their success in distance education courses, they have problems during the lesson due to internet interruptions and they prefer face-to-face education. In the distribution between the opinions of female and male students, Kaynar, Kurnaz, Doğrukök,

Şentürk Barışık (2020) and Gökbulut, B . (2021), no significant differentiation was observed as in the studies. In the study, it was observed that there was a difference between the classes. 5th grade students stated more positive views towards distance education. In the research conducted by Kaynar, Kurnaz, Doğrukök, Şentürk Barışık (2020), the fact that students with a high love for school gave more positive answers than other students can be attributed to the fact that younger children give positive results due to their high commitment to school. Basaran, M, Dogan, E , Karaoglu, M , Sahin, E . (2020) When the number of siblings increases, it is seen that they cannot attend every lesson with distance education due to technological inadequacies. This situation is possible not only in distance education but also in face-to-face education due to the physical conditions at home. In the study, it was seen that there was no significant difference between the number of siblings in mathematics courses in students' access to distance education. In the statement of MEB (2021) on distance education, it was emphasized that the number of siblings was an important factor and emphasized that this was one of the most important criteria in tablet distribution studies. Every student should prepare the working environment well in order to increase success in education. Order and silence in the working environment are important factors for the understanding of the lesson.

In the study of Kaynar, Kurnaz, Doğrukök, Şentürk Barışık (2020), it was stated that students in their own rooms, without anyone else, were more efficient in distance education, but no information was given that they had their own rooms. As a result of the research, there was no significant difference in the views of the students who have their own room and the students who do not have their own room about the distance education mathematics course.

Conclusion

A questionnaire was applied to the students in order to examine the opinions of the secondary school students about the mathematics course taught with distance education. Sub-objectives were created for the enlargement of the study area of the research and the data obtained were distributed to sub-objectives. When we examine the negative aspects of distance education and mathematics course for students from the data obtained; It was determined that they could easily attend the mathematics lesson, but they had problems due to internet interruptions during the lesson, their negative views on understanding the lesson better, their success in the lesson did not increase with distance education and their interest in the lesson did not change, the subjects were not remembered and their attention was distracted quickly during the lesson, and they did not find the mathematics lesson effective with distance education. weighs heavily. The majority of girls and boys are of the opinion that they can communicate easily with their teachers during the lesson and do not have any problems while getting and submitting their homework. Students, tablets, computers, etc. to each student. He thinks that if it is distributed, the lessons will be more productive. It was seen that the percentage of positive opinions and the percentage of negative opinions were close to each other from the opinions of female and male students about the high motivation during the lesson. In the analyzes made on the answers given to the questionnaire items, no significant difference was observed in the views according to gender. When the data obtained from the 5th grade students were analyzed; The opinions that they can easily access the mathematics lesson but have problems during the lesson, that distance education does not increase their success, that the lessons are not remembered, that they are distracted, and that distance education is not effective are more dominant in percentage.5. When the motivation of the students during the lesson was analyzed, it was seen that the motivation was high in percentage. The negative opinions of 6th grade students about understanding the lesson better and their negative opinions about their high motivation during the lesson are higher in percentage. The opinions expressed in the items other than these items are similar to the opinions expressed by the 5th grade students. It has been observed that the positive opinions of the 7th grade students regarding the item "I am distracted during the lesson" have a close percentage with the negative opinions. Negative views on better understanding of the lesson outweigh the percentage. Opinions on other items are similar to the opinions expressed by the 5th grade students. The percentages of positive and negative opinions given by 8th grade students to the item "I have trouble due to the internet during class" are close to each other. It was observed that negative opinions were higher in the opinions they expressed about the items that they understood the lesson better and that their motivation was high during the lesson. Opinions on other items are similar to the opinions expressed by the 5th grade students.

Considering the number of siblings of the students, when the answers they gave to the questionnaire were analyzed, it was seen that there was no significant difference in the overall questionnaire. In the analysis of the answers, it was seen that the views of the students did not differ significantly according to the number of siblings. When the answers of the students who had their own study room and those who did not, to the questionnaire items were analyzed, it was seen that there was no significant difference.

Suggestions

In the research, the views of secondary school students about distance education and mathematics lesson were examined. In the data obtained, the views of the variables of "gender, class, number of siblings, individual study

room facilities" on nineteen items were examined and presented in tabular form. The information obtained in this research can be used as a reference in new studies on the subject. In the analyzes made, it was seen that the motivation of the students during the lesson was generally high. In order to use this positive situation, teachers can be advised to use methods that will appeal to more senses during the lesson. One of the most dominant opinions of the students is that by ensuring that technological products such as tablets and computers reach all students, the lessons will be more productive when equal opportunities are created. In distance education, as in face-to-face education, it is believed that productivity will increase when equal opportunities are increased. The study was carried out in predetermined provinces. It can be suggested that the research be done as a regional comparison by selecting schools from each region.

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