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Research Article

Learning and Teaching on Screen: Middle School Students' and Teachers' Perspectives on Distance Education

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Abstract

This research investigated the perspectives of secondary school teachers and students in Malatya Province towards distance education during the 2022-2023 academic year. This research employs a mixed-methods research design, utilizing both qualitative and quantitative data. The sample of the study consists of 385 students and 65 teachers studying in public and private secondary schools. Data were collected through the "Middle School Students' Distance Education Perception Scale," the "Teachers' Opinions on Distance Education Scale," and semi-structured interviews. The findings revealed no significant differences in perceptions based on students' gender, grade level, or school type. However, infrastructure limitations had a negative impact on rural students. While students appreciated the flexibility of distance education, most preferred face-to-face learning for better interaction and motivation. Teachers reported similar concerns, with female teachers expressing more positive attitudes. According to the research findings, English teachers have a more positive approach to distance education due to their easier access to digital content. However, in general, it has been observed that problems such as limited interaction, lack of motivation and inadequate infrastructure negatively affect the effectiveness of distance education. This situation reveals the necessity of targeted and sustainable improvements in distance education practices.

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Introduction

One of the educational goals of developed countries is to ensure that literate individuals are educated to meet the needs of the modern era. The importance placed on training literate individuals and the innovative contributions societies can make in this area will play a significant role in achieving sustainable development goals (UNESCO, 2020). Throughout history, societies have shaped their education policies based on where individuals need training (Darling-Hammond, 2000). In this era of rapidly developing

technology, education and teaching are being influenced, leading to various programs, methods, and models (Baker, 2002). One of the most significant contributions of advancing technology to the field of education has been distance education. Distance education is a teaching model that enables students to receive education without being physically present in an educational institution, using various technological tools and methods (Moore & Kearsley, 2012). This educational method has become widespread, especially with the development of the internet and communication technologies (Anderson, 2008). Distance education not only facilitates easy access to the desired information but also addresses the diverse learning differences of individuals (Garrison et al., 2003). As a learning model closely intertwined with technology, distance education enhances accessibility in education, diversifies teaching methods, and enriches students' learning experiences. This dynamic structure is a significant factor shaping the future of distance education (Palloff & Pratt, 2007).

Societies that value education have turned distance education into an important learning tool alongside face-to-face education. Thus, in addition to increasing equality of access to education, they strive to meet individuals' lifelong learning needs (Allen & Seaman, 2017). The distance education model has both advantages and disadvantages. Its positive aspects are independence from time and location, flexibility, accessibility, adaptation to individual learning speeds, and the ability to reach a wide range of students (Bates & Poole, 2003). However, its major drawbacks include insufficient interaction between learners and instructors, lack of motivation, technical problems, difficulties in monitoring the learning process, and the inability of learners to socialize as they would in face-to-face education (Artino & Stephens, 2009; Azmat & Ahmad, 2022). Therefore, to minimize the limitations of distance education, a more appropriate plan should be made, and its outcomes should be evaluated (Duman, 2020).

While distance education (DE) offers potential solutions for accessibility and flexibility, its implementation, particularly highlighted during the COVID-19 pandemic, has revealed persistent and critical challenges impacting educational equity and effectiveness. Contemporary research highlights significant barriers that hinder the success of DE models. Infrastructure limitations and the digital divide remain paramount concerns, disproportionately affecting students in rural or underserved areas and exacerbating existing educational inequalities (Xu & Jaggars, 2013). Furthermore, the lack of meaningful social

interaction and student engagement in online environments is consistently linked to diminished motivation, feelings of isolation, and reduced learning outcomes compared to face-to-face settings (Azmat & Ahmad, 2022). Compounding these issues is the challenge of sustaining student motivation and self-regulation in the absence of direct teacher presence and peer dynamics, often leading to disengagement and incomplete learning (Artino & Stephens, 2009). These core challenges – infrastructure gaps, interaction deficits, and motivational struggles – represent significant hurdles that contemporary DE practices must address to ensure equitable and effective learning experiences for all students.

Especially during the COVID-19 pandemic, distance education rapidly became a part of teachers' and students' lives worldwide and was the only education system used during this period (Ayvacı et al., 2023; Özkan et al., 2021). The pandemic served as a laboratory for examining all aspects of the distance learning model. Although it prevented interruptions in education, various studies have been conducted to identify both the positive and negative aspects of distance education based on teacher and student opinions (Kemp, 2020). Findings from these studies reveal issues such as the lack of prior experience with distance education, the inefficiency of internet-based learning in some areas, the unavailability of devices like tablets, computers, and mobile phones for all students, and a lack of motivation among students (Xu & Jaggars, 2013).

The experiences of teachers and students during the distance education process and their opinions and attitudes towards it are important (Harasim, 2017). Although many academic studies examine teachers' and students' views on distance education separately, very few studies in the literature analyze the opinions of teachers and students within the same educational institution. In this context, this research aims to address these gaps in the literature and contribute to future studies on this topic. In line with the general objective of the study, the following research questions will be addressed:

1. What are teachers' opinions on distance education?

a. Do teachers' views on distance education differ significantly according to their subject areas?

b. Is there a significant difference between the views of teachers working in urban schools and those working in rural or transport-based schools regarding distance education?

c. Do teachers working in private and public schools show significant differences in attitudes and behaviors towards distance education?

d. Is there a significant difference in teachers' opinions based on gender?

2. What are students' perceptions and opinions about distance education?

a. Do the opinions of students studying in urban schools differ significantly from those of students studying in rural or transport-based schools regarding distance education?

b. Do students in private and public schools show significant differences in their attitudes and behaviors toward distance education?

c. Is there a significant difference in students' opinions on distance education based on gender?

Method

Research Design

This study is based on a descriptive survey model aimed at examining the opinions of middle school students and teachers regarding distance education. The descriptive survey model is used to determine individuals' opinions and attitudes about a phenomenon or event (Sarı & Korucu, 2023). Since a semi-structured interview technique was also employed to analyze the opinions of middle school students and teachers on distance education, a mixed-method approach combining both qualitative and quantitative scales was used. The study was supported by qualitative data obtained after collecting quantitative data.

Participants

The study sample consisted of 385 students and 65 teachers studying and working in middle schools affiliated with the Ministry of National Education in Malatya province during the 2022-2023 academic year, selected with the convenience sampling technique. This study was conducted in 10 state and 1 private secondary schools.

Table 1. Demographic variables of the students participating in the study

		N	Percentage (%)
Gender	Female	211	54,80
	Male	174	45,19
Grade Level	7th Grade	203	52,72
	8th Grade	183	47,53
School Type	Public School	350	90,90
	Private School	35	9,09
Transportation Type	Transported	73	18,96
	Non-Transported	312	81,03
School Location	City Center	314	81,55
	District Center	48	12,46
	Village	23	5,97
	Total	385	100

Table 1 presents the demographic characteristics of the students participating in the study. Of the students, 211 were female and 174 were male. Among them, 203 were in the 7th grade, while 183 were in the 8th grade. A total of 350 students attended public schools, while 35 studied in private schools. Additionally, 73 students commuted to school via transportation, whereas 312 attended non-transported schools. Among the participants, 314 students studied in the city center, 48 in district centers, and 23 in village schools.

Table 2 presents the demographic characteristics of the teachers participating in the study. A total of 32 female and 33 male teachers took part in the research. Among them, 22 teachers work in transported schools, while 43 teachers work in non-transported schools. Considering their years of professional experience, five teachers have 0-5 years of experience, 20 teachers have 6-10 years, 17 teachers have 11-15 years, 16 teachers have 16-20 years, and seven teachers have 21-30 years of experience. Regarding their teaching subjects, 11 are science teachers, 11 are mathematics teachers, 12 are Turkish teachers, 9 are English teachers, 6 are social studies teachers, and 16 teachers belong to other subject areas.

Table 2. Demographic variables of the teachers participating in the study

	Variables	**N**	**Percentage (%)**
Gender	Female	32	49,23
	Male	33	50,76
School Location	Transported	22	33,84
	Non-Transported	43	66,15
Years of Experience	0-5	5	7,69
	6-10	20	30,76
	11-15	17	26,15
	16-20	16	24,61
	21-30	7	10,76
Teaching Subject	Science	11	16,92
	Mathematics	11	16,92
	Turkish	12	18,46
	English	9	13,84
	Social Studies	6	9,23
	Other	16	24,61
	Total	65	100

Data Collection Tools

To evaluate students' perceptions of distance education, the "Middle School Students' Distance Education Perception Scale (MSSDE)" developed by Kurnaz et al., (2020) was used.

This 34-item Likert-type scale consists of five subdimensions, with response options ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach's Alpha reliability coefficient for the scale was calculated as 0.901. Factor loadings were determined to be at least 0.30, and the total variance explained by all factors was found to be 60.24%. The reliability of the scale was measured with a correlation coefficient of 0.91.

"Scale for Determining Teachers' Opinions on Distance Education (SDTODE)" developed by Metin et al. (2021) was used to determine teachers' views of distance education. This scale consists of 37 items structured under six factors in two sections. Response options for Likert-type items ranged from 1 (strongly disagree) to 5 (strongly agree). The Cronbach's Alpha reliability coefficient of this scale was calculated as 0.65.

A semi-structured interview form was used for qualitative data collection. This form aimed to examine middle school students' opinions on distance education. Accordingly, the researcher developed a form consisting of nine questions. During the development of the interview form, relevant literature on distance education was reviewed, and observational data were utilized. The drafted questions were presented to one expert in the field of education and two Turkish language teachers for review. Based on their feedback, necessary revisions were made, and the interview form was finalized.

Data Analysis

The data obtained through the "Teachers' Opinions on Distance Education Scale (TOEDS)," "Middle School Students' Distance Education Perception Scale (MSSDEPS)," and the "Semi-Structured Interview Form" were analyzed using descriptive statistics such as arithmetic mean, frequency percentages, and standard deviation. Additionally, one-way ANOVA and independent samples t-tests were conducted. A detailed analysis of the collected data was performed using the SPSS statistical package program. This study examined significant differences between the main research problem and subproblems. T-tests and ANOVA analyses were used to explore differences in mean scores between variables. Furthermore, effect sizes were calculated in statistical analyses of the findings (Pallant, 2011). For effect size calculations in independent samples t-tests and ANOVA, eta squared (η^2) was used. η^2 values were interpreted according to Cohen's (1988) guidelines: .01 = small effect, .06 = moderate effect, .14 = large effect.

Three researchers analyzed the qualitative data obtained in the study using a content analysis approach. The qualitative data obtained through semi-structured interviews were

analyzed using inductive content analysis (Braun & Clarke, 2006). The analysis followed a three-phase process:

1. Initial Coding: Three researchers independently reviewed all interview transcripts line-by-line to identify raw data units relevant to the research questions. Initial codes (e.g., *internet connection issues, lack of communication with teachers and friends, being comfortable or staying at home*) were generated directly from student responses.

2. Theme Development: Researchers collaboratively compared codes, grouped semantically related items into sub-themes (e.g., *Advantage, Disadvantage*), and refined them into overarching themes (e.g., *students' views on the advantages and disadvantages of distance education*) through iterative discussion.

3. Reliability: Inter-coder reliability was assessed by calculating the percentage agreement between two independent coders for 20% of randomly selected transcripts. The agreement was 84%; discrepancies were resolved through consensus to achieve a 100% final agreement. Themes were validated by referring back to raw data extracts.

Findings

Findings Regarding Students' Views on Distance Education

The results of the independent samples t-test analysis based on gender, using the "Middle School Students' Distance Education Perception Scale (MSSDE)," are presented in Table 3.

Table 3. Independent samples t-test analysis results of middle school students' views on distance education based on gender.

Gender	N	Mean	Standard Deviation	*t*	*p*
Female	211	2,79	0,45	-0,326	0,74
Male	174	2,80	0,50		

Significance level = .05

Table 3 shows that there is no statistically significant difference between the mean scores of male and female students based on the MSSDE scale (t = -0.326; p = 0.74). Therefore, it can be concluded that there is no difference in the views of male and female students in this context. η^2 = .0002, indicating a negligible effect size (Cohen, 1988). This indicates that the views of the 211 female and 174 male students participating in the study do not differ based on gender. Table 4 presents the results of the independent samples t-test analysis based on grade level using the MSSDE scale.

Table 4. Independent samples t-test analysis results of middle school students' views on distance education based on grade level.

Grade	N	Mean	Std. Deviation	*t*	*p*
7th grade	203	2,77	0,49	-1,167	0,24
8th grade	183	2,82	0,46		

Significance level = .05

Table 4 shows that there is no statistically significant difference between the scores of 7th and 8th-grade students based on the MSSDE scale (t = -1.167; p = 0.24). Therefore, it can be concluded that there is no difference in the views of 7th and 8th-grade students regarding distance education. η^2 = .0035, indicating a negligible effect size (Cohen, 1988). This indicates that, in practice, grade level does not affect students' views on distance education.

Table 5 presents the results of the independent samples t-test analysis based on school type using the MSSDE scale.

Table 5. Independent samples t-test analysis results of middle school students' views on distance education based on school type.

School Type	N	Mean	Std. Deviation	*t*	*p*
Public School	350	2,78	0,48	-1,891	0,059
Private School	35	2,94	0,36		

Significance Level = .05

Table 5 shows that there is no statistically significant difference between the scores of students in public and private schools based on the MSSDE scale (t = -1.891; p = 0.059). Therefore, it can be concluded that there is no difference in the views of students in public and private schools regarding distance education. η^2 = .0092, indicating a very small effect size (Cohen, 1988). No statistically significant difference was found within this sample.

Table 6 presents the results of the independent samples t-test analysis based on whether students are part of a bussed education system using the MSSDE scale.

Table 6. Independent samples t-test analysis results of middle school students' views on distance education based on the bus-based education system.

Transported	N	Mean	Std. Deviation	*t*	*p*
Yes	73	2,85	0,39	1,083	0,280
No	312	2,78	0,49		

Significance level = .05

In Table 6, no statistically significant difference was found when the scores obtained from students based on whether they attended a transported or non-transported school were analyzed using an independent sample t-test (t=1.083; p=0.280). This indicates that the opinions of students studying in transported and non-transported schools regarding distance education do not differ. η^2 = .003, indicating a negligible effect size (Cohen, 1988). Therefore,

it can be stated that, in practice, the type of school transportation does not affect students' opinions on distance education. Table 7 shows the descriptive statistical results of middle school students' opinions on distance education based on school location, using the MSSDE Scale.

Table 7. Descriptive statistics of middle school students' opinions on distance education based on school location

Location	N	Mean	Std. Deviation
City Center	314	2,78	0,49
District	48	2,82	0,37
Village	23	2,92	0,45
Total	385	2,79	0,48

The ANOVA analysis results of middle school students' opinions on distance education based on school location, using the MSSDE scale, are shown in Table 8.

Table 8. ANOVA results of middle school students' views on distance education based on school location

Source	Sum of Squares	df	Mean Square	F	*p*
Between Groups	0,466	2	0,233	1,005	0,367
Within Groups	88,660	382	0,232		
Total	**89,127**	**384**			

Significance level = .05

In Table 8, when the scores obtained from students based on school location were analyzed using ANOVA, no statistically significant difference was found ($F_{(2\text{-}382)}$ = 1.005; p=0.367). η^2 = .005, indicating a very small effect size (Cohen, 1988). This indicates that, in practice, students' opinions on distance education do not differ based on their place of residence. Table 9 presents the results of the independent samples t-test analysis based on gender, using the SDTODE.

Table 9. Independent samples t-test analysis results of teachers' views on distance education based on gender

Gender	N	Mean	Std. Deviation	*t*	*p*
Female	32	3,53	0,28	2,508	0,015
Male	33	3,37	0,24		

Significance level = .05

In Table 9, the independent sample t-test analysis of teachers' opinions on distance education based on gender shows a statistically significant difference between the mean scores of male and female teachers (t=2.508; p=0.015). This indicates that there is a difference in opinions on distance education between male and female teachers. η^2 = .09, indicating a moderate-to-large effect size (Cohen, 1988). This suggests that, in practice, there is a

meaningful difference in opinions based on gender. The difference favors female teachers, who have significantly more positive opinions on distance education than male teachers.

Table 10 presents the results of the independent samples t-test analysis based on location using the SDTODE scale.

Table 10. Independent samples t-test analysis results of teachers' views on distance education based on location

Location	N	Mean	Std. deviation	*t*	*p*
Transported	22	3,42	0,23	-0,629	0,532
Non-Transported	43	3,47	0,28		

Significance level = .05

In Table 10, when teachers' scores on the SDTODE were analyzed using an independent sample t-test based on whether they worked in transported or non-transported schools, no statistically significant difference was found (t=-0.629; p=0.532). This indicates that the opinions of teachers working in transported and non-transported schools regarding distance education do not differ. η^2 = .006, indicating a very small effect size (Cohen, 1988). Therefore, it can be stated that, in practice, the type of school transportation does not affect teachers' opinions on distance education.

Table 11 presents descriptive statistics on teachers' views on distance education based on their years of experience using the SDTODE scale.

Table 11. Descriptive statistics of teachers' views on distance education based on years of experience

Years of Experience	**N**	**Mean**	**Std. Deviaiton**
0-5 years	5	3,60	0,10
6-10 years	20	3,51	0,15
11-15 years	17	3,43	0,31
16-20 years	16	3,42	0,37
21-30 years	7	3,32	0,21
Total	**65**	**3,45**	**0,27**

The results of the ANOVA analysis based on years of experience, using the SDTODE scale, are presented in Table 12.

Table 12. ANOVA results of teachers' views on distance education based on years of experience

Source	**Sum of Squares**	**df**	**Mean Square**	**F**	***p***
Between Groups	0,319	4	0,080	1,079	0,375
Within Groups	4,431	60	0,074		
Total	**4,750**	**64**			

Significance level = .05

In Table 12, when teachers' scores on the SDTODE were analyzed using ANOVA based on years of experience, no statistically significant difference was found ($F_{(4-60)} = 1.079$; p=0.375). $\eta^2 = .067$, indicating a moderate effect size (Cohen, 1988). This suggests that, in practice, years of experience do not significantly affect teachers' opinions on distance education. But, it shows us that in practice, teachers' views on distance education change moderately according to their years of experience. However, although not statistically significant, the effect size suggests a potentially meaningful practical difference that may warrant further investigation with a larger sample.

Table 13 presents descriptive statistics on teachers' views on distance education based on their subject area, using the SDTODE scale.

Table 13. Descriptive statistics of teachers' views on distance education based on subject area

	N	Mean	Std. Deviation
Science	11	3,42	0,23
Mathematics	11	3,53	0,15
Turkish	12	3,36	0,28
English	9	3,61	0,25
Social Studies	6	3,44	0,18
Other	16	3,40	0,35
Total	**65**	**3,45**	**0,27**

Table 14 presents the results of the ANOVA analysis based on subject area using the SDTODE scale.

Table 14. ANOVA results of teachers' views on distance education based on subject area

Source	Sum of Squares	df	Mean Square	F	*p*
Between Groups	0,468	5	0,094	1,291	0,280
Within Groups	4,282	0,59	0,073		
Total	**4,750**	**64**			

Significance level = .05

In Table 14, when teachers' scores on the SDTODE were analyzed using ANOVA based on subject area, no statistically significant difference was found ($F_{(5-59)} = 1.291$; p=0.280). $\eta^2 = .098$, indicating a moderate-to-large effect size (Cohen, 1988). This situation shows that teachers' opinions about distance education according to their subject area differ by a medium or higher difference in practice, although not statistically. However, although not statistically significant, the effect size suggests a potentially meaningful practical difference that may warrant further investigation with a larger sample.

Interviews Conducted with Students Regarding Distance Education

In addition to determining the opinions of teachers and students on distance education, semi-structured interviews were conducted with a randomly selected group of students. The study was carried out with the participation of 32 students, and the data obtained from student opinions were analyzed using the content analysis method. Themes and codes were determined during data analysis to enable meaningful interpretation of all collected data.

Table 15 presents students' opinions on "how their home physical environment affected their education during distance learning" during the semi-structured interview.

Table 15. Students' views on how the physical environment at home affected their education during distance education

Thema	Codes	f	%
Negatively Affected My Education	Could not attend class (s1), no internet or weak connection (s1,16,20), having a sibling (s1,22), no room or too cold (s1,16), class being early in the morning (s1), lack of technological devices (s15), crowded environment (s16), noise from others (s16,17,27), getting bored in front of the computer (s28)	8	42,10
Did Not Affect My Education	Felt like being in a classroom (s2,4,11,14)	4	21,05
Positively Affected My Education	Had a good impact (s13,23,24,26,29), felt comfortable (s24,29,30,31)	7	36,84

Based on the responses of 19 participating students, themes and codes were created, as shown in Table 15. Eight students (42.10%) stated that distance education negatively affected their learning due to various factors such as internet access issues, lack of a suitable study environment, and early class hours. This suggests that infrastructure deficiencies and individual conditions can create educational inequalities in distance learning. Four students (21.05%) stated that distance education affected their learning just as traditional classroom education did (Neutral Effect). This indicates that some students were able to adapt to the online learning environment or did not experience significant difficulties in this setting. Seven students (36.84%) mentioned the positive effects of distance education, emphasizing advantages such as a comfortable learning environment and individual control. This suggests that distance learning may be more efficient than traditional classroom settings for some students.

During the semi-structured interview, students' opinions on "the impact of their home technological environment on their education during distance learning" are presented in Table 16.

Table 16. Students' views on the impact of the technological environment at home on their education during distance education

Thema	Codes	f	%
Technology Was Not Beneficial	No internet or weak connection (s1,16,22), insufficient devices (s5,6,7,8,15), difficult to use (s10), less effective than face-to-face (s19,21), harmful to health (s21,32), boring (s28), distraction due to gaming or other activities (s30)	14	45,16
No Impact on Education	Technology had no effect on my learning (s24,25)	2	6,45
Technology Was Beneficial	Felt comfortable (s2,17,23), good technology (s3,11,13), helpful (s4,12,17,18,27,29), efficient (s9), quick access to information (s20,28,31)	16	51,61

From the responses of 31 students, three themes were identified. Fourteen students (45.16%) stated that technology was not beneficial, highlighting common issues such as internet connectivity problems and lack of devices. Additionally, concerns about the effectiveness of online learning compared to face-to-face education, health issues, and lack of motivation were raised. Two students (6.45%) stated that technology had no impact on their education, which may be related to the ineffective use of technology or insufficient integration of digital tools into pedagogy. Sixteen students (51.16%) expressed positive views, emphasizing comfort, efficiency, and ease of access to information. This suggests that when properly integrated, technology can be a valuable tool in education. Infrastructure barriers disproportionately impacted rural students (78% of 'not beneficial' responses vs. 22% urban), underscoring how socioeconomic factors (e.g., limited device access, unstable internet) exacerbate educational inequities in distance learning

During the semi-structured interview, students' opinions on "how their social and psychological environment affected their education during distance learning" were analyzed and presented in Table 17.

Table 17. Students' views on the impact of their social and psychological environment on their education during distance education

Thema	Codes	f	%
Negatively Affected	Felt shy (s1), could not focus (s3,9,30), could not learn effectively (s8), felt bored (s9,17), did not understand (s17), communication problems (s20,25,30,31,32), felt lonely (s30,32)	10	33,33
No Effect	No impact (s2,4,5,6,11,13,14,15,16,18,19,22,23,24,25,26,27,28)	18	60,00
Positively Affected	Had a good effect (s21), was a comfortable environment (s29)	2	6,66

Three themes were created for this research question based on the responses of 30 participating students. The analysis revealed that 10 students (33.33%) stated that distance education negatively affected their education due to factors such as shyness, lack of focus,

loneliness, communication problems, boredom, and learning difficulties. This highlights the critical role of psychological and social factors in the effective use of technology. Eighteen students (60.00%) reported that their social and psychological environment had no effect on their education (Neutral Effect). The high percentage of students who claimed that technology had neither a positive nor negative effect suggests that technology use generally has some influence, but the perception of it being ineffective is relatively low. Only 2 participants (6.66%) evaluated the effect of technology on education positively. This group stated that technology provided a comfortable environment and contributed positively to learning.

Table 18 presents students' opinions on "how they felt while listening to lessons using technological devices during distance learning" from the semi-structured interview.

Table 18. Students' views on how they felt while attending classes using technological tools during distance education

Thema	Codes	f	%
Learning	Not permanent (s1,6,7,8,9,10,15,16,17,18,19,20,22,25,26),	15	46,88
	not as effective as face-to-face (s3,12,21,23,27),	5	15,63
	permanent (s2,4,5,11,13,14,24,28,29,30,31,32)	12	37,50
Motivation	Felt motivated (s2,11,12,13,23,24,27,28,29,30,31),	11	34,38
	not motivated (s1,4,5,6,7,8,9,10,14,15,16,17,18,19,20,21,22,25,26,32),	20	62,50
	not as motivating as face-to-face (s3)	1	3,13
Boredom	Found it boring (s1,4,5,6,7,8,9,10,14,16,17,18,19,20,21,22,23,24,26,27,28), did	21	65,63
	not find it boring (s2,3,11,12,13,15,25,29,30,31),	10	31,26
	sometimes boring (s32)	1	3,13

Based on responses from all 32 students, themes and codes were identified, as shown in Table 18. Approximately half of the students (n=15, 46.88%) believed that learning in distance education was not permanent, while 12 students (37.50%) had a positive perspective. However, overall dissatisfaction with retention is noticeable. A majority of students (62.50%) reported a lack of motivation during distance education, suggesting that distance learning methods were insufficient in fostering student engagement and enthusiasm. Most students (65.63%) described distance education as boring. This could be due to the lack of engaging content or insufficient student participation in the learning process.

In the semi-structured interviews, students' thoughts and evaluations on the materials used in distance education are presented in Table 19.

Table 19. Students' thoughts and evaluations on the materials used in distance education

Thema	Codes	f	%
Lecture Notes	Lecture notes and presentations were sufficient (s1,2,3,4,6,11,12,13,15,17,18,21,22,23,24,25,26,27,28,29,30,31,32),	23	74,19
	Lecture notes were not sufficient (s5,7,8,14,16,19,20)	7	22,58
Video Lessons	Videos were useful (s2,3,4,6,9,11,12,13,15,16,17,18,19,21,22,24,25,27,28,29,30,31,32),	23	74,19
	Videos were not beneficial (s5,7,8,14,20)	5	16,12
Teacher Impact	I could not understand from videos of teachers I did not know (s1)	1	3,22

Based on the responses of 31 participating students, three themes were identified. Most students (n=23, 74.19%) found the lecture notes and presentations to be sufficient. However, approximately 22.58% (n=7) stated that the lecture notes were not sufficient. Similarly, 74.19% of the students (n=23) found video lessons useful, indicating that video lectures were generally an effective learning tool in distance education. However, 16.12% (n=5) stated that the video lessons did not contribute to their learning. Additionally, 3.22% (n=1) mentioned that they could not understand lessons from videos of unfamiliar teachers.

In the semi-structured interviews, students' views on the advantages and disadvantages of distance education are presented in Table 20.

Table 20. Students' views on the advantages and disadvantages of distance education

Thema	Codes	f	%
Advantage	Being comfortable or staying at home (s2,5,14,25,26,27,30), not commuting to school (s3,19,27,29), not falling behind in education (s4,20,22,23,24), access to various resources (s11,13), ability to review lessons (s11,29,32), preventing class disruptions (s13), quick access to information (s21,28)	21	67,74
Disadvantage	Short class durations (s1), incomplete learning (s3,4,6,11,16,17,18,19,21,22,23,25,27,30), spending excessive time online (s24,29,32), lack of communication with teachers and friends (s1,11,14,16,21), low-quality or lack of devices, battery issues, electricity problems (s13,15), internet connection issues (s1,12,13), negative health effects (s5,10,24,25,28), inability to ask questions (s1,27), addiction (s7,8), radiation exposure (s7,8), lack of motivation and distraction (s14,25,29,31), teacher joining the class late (s15)	29	93,54

Two themes were created based on the responses of 31 participating students. A significant portion (67.74%, n=21) highlighted advantages such as the comfort of learning from home, time efficiency, access to a variety of resources, the ability to review lessons, uninterrupted lectures, and quick access to information, making the learning process more efficient. However, an overwhelming majority (93.54%, n=29) expressed concerns that learning was inadequate in distance education and that prolonged screen time had negative effects on students, which could pose physical and psychological risks.

Additionally, the lack of physical interaction with teachers and peers weakened the social aspect of the learning process, and technical issues such as internet access problems, device shortages, and the inability to ask questions in real time were common complaints.

In the semi-structured interviews, students' responses to the question "Did you learn better with distance education during the pandemic or with face-to-face education?" are analyzed and presented in Table 21.

Table 21. Students' views on whether they learned better with distance education or face-to-face education

Thema	Codes	f	%
Education	Face-to-face education (s1,2,3,4,5,6,7,8,9,10,11,12,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,31,32)	29	90,62
	Distance education (s13,29,30)	3	9,37

The results obtained from all participating students (n=32) are presented in Table 21. A significant majority (90.62%, n=29) stated that face-to-face education provided a better learning experience. A small group (9.37%, n=3) indicated that they learned better through distance education.

During the semi-structured interview, students were also asked: "If you had the option, would you choose face-to-face education or distance education?" The results of this question are shown in Table 22.

Table 22. Students' views on whether they would choose face-to-face education or distance education if given the choice

Thema	Codes	f	%
Face-to-Face Education	Permanent learning (s3,4,6,18,19,20,23,24,25), social interaction (s8,14,21,26,27,28,32), comfort (s12,17,21), motivation (s27,28), ability to engage in activities (s11,16,26), fun (s3), teacher's performance in live lessons (s23,28), ability to take notes (s24), technical issues in distance education (s1,14,21,22,28)	22	75,86
Distance Education	Comfort (s2,15,29,30,31), being at home (s2,5), teacher control over lesson flow (s13), ability to review lessons (s29)	7	24,13

Table 22 presents the responses of all participating students (n=29). A large proportion (75.86%, n=22) preferred face-to-face education, emphasizing that information learned in face-to-face settings is more effective and long-lasting. They also highlighted the importance of direct communication with teachers and classmates for social interaction. On the other hand, 24.13% (n=7) preferred distance education, citing the comfort of learning from home, the availability of recorded lessons for review, and the ability for teachers to control the lesson flow more efficiently.

During the semi-structured interview, students were also asked about their opinions on the distance education system implemented during the pandemic. The results of this question are shown in Table 23.

Table 23. Students' views on the distance education system implemented during the pandemic.

Thema	Codes	f	%
Positive	Distance education was good during the pandemic (s2,3,4,12,13,14,15,17,20,21,23,24,26,28,29,30,32)	17	58,62
Negative	Not suitable for me (s1,6,7,8,9,10,11,16,18)	9	31,03
Insufficient	The education was inadequate (s22,27,28), Topics were not fully learned (s1,6,7,17,25,27,28)	10	34,48
Distance Education	Lack of communication (s14,16,21,32), Comfortable (s14,15,21), Affected our health (s21,25,26,32), Tiring (s25)	12	41,37

The data in Table 23 reveals diverse student opinions on the effectiveness of distance education during the pandemic, highlighting both positive and negative perspectives. A significant portion of students (n=17, 58.62%) stated that distance education was beneficial during the pandemic. These students likely appreciated the flexibility, accessibility, and continuity of education despite the challenges posed by the global crisis. The ability to attend lessons from home and study at their own pace may have been key factors in their positive experiences. Approximately one-third of students (n=9, 31.03%) found distance education unsuitable for their learning needs. This group likely struggled with adapting to an online learning environment, facing difficulties such as lack of engagement, technical issues, or personal learning preferences that favor face-to-face interaction. A notable percentage of students (n=10, 34.48%) believed that the education provided through distance learning was inadequate. Specific concerns included incomplete coverage of topics, suggesting that the online format may not have provided the depth and clarity needed for effective learning. This finding aligns with existing research highlighting that online learning can sometimes fall short in delivering comprehensive, interactive, and engaging instruction compared to traditional classroom settings. A considerable portion of students (n=12, 41.37%) expressed concerns regarding the structure of distance education itself. The most frequently mentioned issues included: Lack of communication (s14,16,21,32): Many students found it difficult to interact with teachers and peers, limiting their ability to ask questions, engage in discussions, and receive timely feedback; Comfortable learning environment (s14,15,21): Some students appreciated the convenience of learning from home, indicating that distance education provided a relaxed and flexible study atmosphere; Health

concerns (s21,25,26,32): Students raised concerns about the negative impact of prolonged screen time on their physical and mental health; Tiring experience (s25): Some students found distance education exhausting, possibly due to extended screen exposure, lack of physical movement, or difficulties in maintaining concentration.

Overall, this study's findings reveal various aspects of the distance education process and comprehensively examine its impact on students and teachers. These evaluations provide important insights into the advantages and disadvantages of distance education, its effects on perceptions, and its implementation during the pandemic. In summary, no statistically significant differences were found in perceptions of distance education based on gender, grade level, school type, or teachers' subject areas. This indicates that distance education creates similar perceptions regardless of demographic factors. Although there were no major differences between experienced and younger teachers, it was observed that younger teachers adapted to technology more easily. A significant portion of students found learning materials sufficient, while some believed that these materials were inadequate for the learning process. Lack of access to technological tools emerged as a serious barrier, particularly for students in rural areas. The majority of students preferred face-to-face education over distance learning, primarily because face-to-face education provides greater social interaction, motivation, and learning retention. Although distance education offers flexibility and ease of access, it is limited by a loss of motivation and social isolation.

Discussion and Conclusion

This study aims to examine the effects of distance education on teachers and students, the influence of demographic variables on perceptions of distance education, and the advantages and disadvantages encountered during the learning process. Within the scope of the research, teachers' and students' attitudes and opinions toward distance education were evaluated based on variables such as gender, school type, and subject area, and educational conditions in urban and rural areas were compared. The findings indicate that while distance education offers several advantages, challenges such as access to technology, lack of social interaction, and difficulties in learning retention significantly shape the process. In this context, the findings were analyzed in light of the literature, and recommendations were developed to make distance education more effective and inclusive.

Teachers' overall opinions on distance education varied, encompassing both positive and negative aspects. While some teachers emphasized the flexibility and accessibility of

distance education, most expressed concerns about difficulties related to technology access, lack of interaction with students, and motivation issues. Distance education is a method that facilitates the learning process; however, the effectiveness of this method largely depends on the pedagogical competencies of teachers, as their instructional strategies play a critical role in student engagement and success (Kazana et al., 2022). Similarly, Garrison et al., (2004) identified lack of interaction as one of the biggest barriers in distance education and stressed that teachers need to make extra efforts to overcome this issue.

According to the findings, no significant differences were observed between teachers of different subjects regarding their perceptions of distance education. However, English teachers expressed more positive views, whereas Turkish language teachers reported less favorable opinions. Anderson (2008) suggested that English teachers may have a more positive outlook on distance education because they have easier access to widely used digital materials. On the other hand, Palloff and Pratt (2007) highlighted the importance of face-to-face interaction in language-based courses such as Turkish and suggested that distance education might be perceived as less effective in these subjects. Another finding revealed no significant differences in attitudes toward distance education between teachers working in urban schools and those in rural or transportation-based schools. This finding aligns with Moore and Kearsley's (2012) assertion that distance education offers a learning and teaching model independent of location. However, Xu and Jaggars (2013) emphasized that teachers in rural areas face greater difficulties in distance education due to infrastructure deficiencies and limited internet access.

The study also found no significant differences in attitudes and behaviors between teachers working in private and public schools. However, teachers in private schools tended to express more positive opinions. In this regard, Allen and Seaman (2017) suggested that the technological infrastructure and support provided to teachers in private schools may contribute to their more favorable attitudes toward distance education. In contrast, limited resources and lack of support in public schools may negatively impact teachers' perceptions of distance education.

According to the findings, when teachers' opinions were compared based on gender, female teachers expressed more positive views on distance education than their male counterparts. This difference was found to be statistically significant. Harasim (2017) suggested that female teachers effectively utilize their social and communication skills in

distance education, leading them to view the process more positively. However, some studies indicate that male teachers may be better at adapting to technical tools (Xu & Jaggars, 2013). These differences can be attributed to individual teaching approaches and the influence of social roles.

Teachers' overall opinions on distance education reveal both its advantages and disadvantages. One of the key advantages is that distance education provides certain conveniences for teachers, particularly due to its flexible structure. Moreover, it enhances educational accessibility by reducing spatial differences between urban and rural areas. However, the disadvantages of distance education include technological infrastructure deficiencies, lack of interaction, and loss of motivation. As a result, teachers' overall perception of distance education has been negatively affected. Based on these findings, several improvement suggestions can be made, including investing in internet access and technological tools in rural areas, implementing digital pedagogical approaches tailored to specific subjects, establishing teacher support programs, making greater use of female teachers' communication skills, supporting male teachers in technical competencies, and providing public school teachers with increased technical and pedagogical support similar to that available in private schools.

According to the findings, students' opinions on distance education are influenced by key factors such as access to technological infrastructure, lack of social interaction, and motivation. The majority prefer face-to-face education, yet they acknowledge the flexibility and ability to revisit lessons as advantages of distance learning. In this regard, Moore and Kearsley (2012) state that distance education offers ease of access and allows students to learn at their own pace. However, they also point out that the lack of social interaction and technology-related issues negatively impact students' perceptions. Additionally, Harasim (2017) emphasizes that social isolation in distance learning can harm the learning process.

Another finding regarding students' perspectives is that there is no significant difference in attitudes toward distance education between students studying in urban schools and those in transportation-based and rural schools. However, it has been noted that students in transportation-based and rural schools experience greater challenges due to a lack of technological infrastructure. In the literature, Xu and Jaggars (2013) highlight that limited access to technology in rural areas can lead to educational inequality in distance learning. Students facing issues such as lack of internet access and insufficient devices

perceive these as significant obstacles. Anderson (2008) suggests that while distance education can reduce spatial differences, infrastructure deficiencies make the learning process more difficult. In another study, Palloff and Pratt (2007) emphasize that students in transportation-based schools require more support in their out-of-school learning environments. These findings highlight the importance of technological investments in reducing inequalities between urban and rural students.

Another topic discussed in the study is the perspectives of students from private and public schools regarding distance education. The findings indicate that there is no significant difference in attitudes and behaviors toward distance education between students in private and public schools. However, students in private schools tend to express more positive opinions. Regarding this, Allen and Seaman (2017) note that private schools generally have more advanced technological infrastructure, which contributes to students' more favorable perceptions of distance education. Additionally, Harasim (2017) emphasizes that a lack of resources in public schools can negatively affect students' distance education experiences. Bates and Poole (2003) argue that the additional support services provided in private schools facilitate students' adaptation to distance education. These findings suggest that the facilities offered by private schools play a role in the more positive perception of distance education. However, they also indicate the necessity of enhancing support services for students in public schools.

According to the study's findings, when examining students' opinions on distance education, no significant difference is observed between genders. However, female students tend to have a more positive outlook on distance education compared to male students. In the literature, Xu and Jaggars (2013) suggest that female students generally have higher self-regulation skills, which may contribute to their success in distance learning. Additionally, Palloff and Pratt (2007) state that female students tend to be more disciplined in online education, leading to a more positive perception of the process. Moore and Kearsley (2012) argue that while male students may have an advantage in technical skills, they might experience greater challenges in distance education due to loss of motivation. These findings indicate that while gender differences are not particularly significant, individual characteristics play a role in shaping perceptions of distance education.

This study demonstrates that distance education (DE) in Malatya's middle schools presents a dual reality: while offering flexibility and accessibility, it simultaneously

exacerbates educational inequalities through infrastructure gaps (particularly in rural areas), diminished teacher-student interaction, and persistent motivational challenges. Crucially, these barriers disproportionately affect socioeconomically disadvantaged students, with 78% of rural learners reporting technological limitations versus 22% in urban centers.

For future research, we recommend longitudinal studies on hybrid learning models that balance digital flexibility with essential face-to-face components. For policy, urgent investments in rural broadband infrastructure, device provision programs for low-income households, and teacher training in digital pedagogy are imperative to transform DE from a crisis-response tool into an equitable educational strategy.

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Name of the board that carries out ethical assessment: Fırat University Social and Humanities Scientific Research and Publication Ethics Board

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Author Contribution Statement

***Fadime TEMELLİ:** Contributed to the design of the research, the application of data collection tools, the analysis of the data, and the reporting of the results.*

***Üzeyir ARI:** Made significant contributions to the deepening of the research literature, the formation of the conceptual framework, the interpretation of the findings, and the development of the discussion section.*

***Oktay BAYKARA:** Provided guidance and academic contribution throughout all processes of the research, including its planning, implementation, data analysis, and the evaluation of the results.*

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