Attitudes of student teachers towards distance education within the context of COVID-19 pandemic

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Abstract

This study aimed to determine the distance education-oriented attitudes of student teachers during the COVID-19 Pandemic. The study adopted survey method, one of the qualitative research designs. The participants of the study were determined randomly on voluntary basis, and consisted of a total of 236 student teachers; 140 females and 96 males in five different departments of Faculty of Education in a state university in the south of Turkey. These departments comprised Turkish Language, Elementary School Mathematics, Science, Physical Education and Sports, Psychological Counseling and Guidance. The data were obtained in 2019-2020 academic year via two instruments; a) A data form including six question items focusing on whether the participants had previously received computer trainings on any area, whether they possessed computers or laptops, the regions of residence, the places of residence, and their department; b) The *Distance Education-Oriented Attitude Scale* developed by Kısla (2016). The form and the scale were provided for the participants online through a link The data obtained were analyzed through the SPSS 25.0 software. For the data analysis, the independent samples T-test was employed for independent variables with two sub-levels, while the one-way ANOVA was used for variables with more than two sub-levels.. As a consequence, the attitudes of the participants were found to be high in general (=3.63; SS= 0.68). It was also observed that the attitude scores did not create any significant differences based on the gender of the students, whether they had previously been trained on computers, whether they possessed equipment, such as smart phones, tablets, computers, etc., or the area of residence. Considering the distance education-oriented attitude scores by departments, however, significant differences were determined in favor of the departments of Turkish Language Teaching, and Psychological Counseling and Guidance.

Keywords: Faculty of Education, Turkish department, COVID-19, distance education, student teachers

1. Introduction

The world has been in constant changes in terms of educational activities, and several new approaches have been put forward instead of traditional education models, which are increasingly disputed by the effects of technology. These discussions had been made

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in academic circles for quite a long period of time, with a transition period that favored technology; nevertheless, unfolding all around the world after having first appeared in the city of Wuhan in China, the COVID-19 pandemic necessitated distance education, made people question the place of technology in education like never before, while solidifying it on the other hand. Before proceeding to the concept of distance education, it is required to mention the twenty-first century skills, which are frequently uttered in the literature, as well as the information technology literacy that is included among those skills.

1.1. Twenty-first century skills and information technology literacy

There have been discussions among researchers, based on numerous scientific studies in regards to what the educational outcomes and the objective of education should be in the world seeing changes in many aspects upon the arrival of the twenty-first century. (Sauve, 1999; Bertrand, 2000; OECD, 2008; Gurria, 2009; Khun, 2010, Robinson, 2011, White, 2014; Ligozat & Almqvist, 2018; Madani, 2019; United Nations, 2020). These discussions are being organized by various institutions and organizations, mainly based in the USA (P21, ATCS, NCREL, United Nations, OECD, European Union, ISTE, etc.). It is possible to state that aforementioned discussions are being held under the topics of the prevention of unemployment by the education system, that it is more flexible and applicable under all circumstances, that it encourages individuals to be more creative and productive while helping them get to know life in a better way, and that it supports psychological and sociological development. Accordingly, it is a must to find an answer to the question of what the skills should be that individuals need to acquire in education in the twenty-first century. Different opinions have been set forth on a number of platforms as to what the modern time skills are that meet the needs of the individual and the society (Voogt & Roblin, 2010; Griffin et al., 2012; Dicerbo, 2014; Lamb et al., 2015); nonetheless, it is possible to say that those are gathered under specific topics. Of almost all of those topics, the skill of using technology in an effective and competent manner seems to be occurring as a significant field of learning that needs to be provided within education. Kereluik et al. (2013) gathered the twenty-first century skills under three main topics, which are given below:
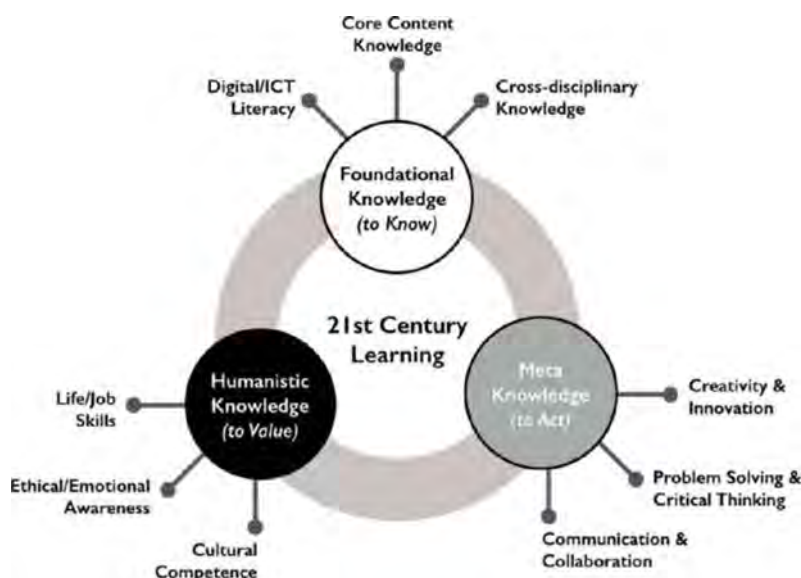
Figure 1. Twenty-first Century Skills

The figure emphasized that rudiments should include the knowledge of technology and different disciplines. It was stated that knowledge in itself is not enough, that it should include values as well, and that culture and ethical principles are important in the construction of values. Eventually, it was reported that individuals should be creative, innovative, problem-solver, and that they should have a critical approach and have the skills to establish good communication in the century we are living in, based on the knowledge. Among those separations, it is seen that digital information and communication technologies are included within fundamental sciences. In a similar manner, Chalkiadaki (2018) gathered twenty-first century skills under four main categories and reported specific skills within the field of digital literacy, which constituted one of those categories.

> ➢ Individual Skills: Self-confidence, Creativity (curiosity, imagination, productivity, playmaking, innovation, etc.), problem-solving and critical thinking (analysis, synthesis, assessment, offering solutions for challenging situations, reasoning, making logical decisions, etc.), existing in a global world (adaptability, taking risks, being capable of managing complex situations, taking risks, etc.).

> ➢ Social Skills: Communication and Collaboration (skills of speaking and writing in mother tongue and in foreign languages, being able to work as a team in mixed situations, open-mindedness, and being able to manage conflicts), cultural and global awareness (being able to know different cultures, being able to appreciate their values, being capable of establishing cross-cultural relations and bonds as an individual), leadership (incentive, taking initiatives, entrepreneurship, power to have influence).

> ➢ Information and Organization of Information: Learning (self-reflection, self-assessment, self-learning, e-learning, independent learning, knowledge

structuring, social and collaboration-based learning, intellectual risks), information management (information literacy, access to data, data management, data analysis, being capable of adapting data to new situations, knowledge of content).

➢ **Digital literacy:** Digital literacy and being able to use media and information technologies, capability in using digital tools, knowledge of tools for establishing mutual communication, thinking critically while using digital tools (criticism, analysis, assessment, creativity, fulfilling ethical responsibilities in technological-cultural fields).

As is seen, that the skills of using information technologies needs to be a significant part of education in the twenty-first century, stands out itself. In other classifications made in a similar manner to this one, the field of technology literacy features similar skills, despite some differences in terms of naming. For instance: "Information, media and technology skills" (P21, 2007), "Information, communication and technology literacy" (Binkley et al., 2009; National Academies of Science. 2012, World Economic Forum Report, 2015), "technologically-interactive tools" (OECD, 2005).

1.2. Distance education and online learning

The history of distance education possibly started as of the dates where people started to communicate with one another remotely; nevertheless, the concept was initially used in the nineteenth century. Having been conducted through mail and newspapers back then, education gained momentum with the appearance of telephone and telegraph following the electronic revolution (Keegan, 1996; Kiryakova, 2009). New components (internet, computer, etc.) were included in the concept of distance education, thanks to the variations occurring in the means of communication upon the advancements in technology. These changes that occurred in time reinforced the purpose of providing a platform of learning, freed from physical limitations and other obstacles, at anytime and anywhere, to anyone who wanted, which is the original objective of distance education. The concept of distance education is mainly distance-focused, meaning that education is provided remotely. Today, this platform of distance education is mostly established through technological contents, which feature sound, video, computer and internet (Roffe, 2004). It is, therefore, not possible to discuss the concept of distance education without the technological tools being used in many fields, such as the management, assessment and evaluation of the same, as well as providing a setting of class. Because many education and learning-based components can be substantially created and offered to students through various web tools.

Figure 2. Distance Education Tools (ReadTheory, 2020)

As it be seen above, popular web tools are being used today in many fields, such as process monitoring and data management, video conference and communication tools, special content tools, homework management, learning management system. Accordingly, it is possible to expand the concept of distance education in a way it includes electronic learning, because this concept also features education, teaching, and information and communication technologies (ICT) (Friesen, 2009). A planning phase must be pursued, which includes the topics of context, design, application, and results, while structuring the online contents being offered through distance education (Means et al., 2014).

Figure 3. The Four Dimensions of Online Learning

The limits of the subjects to be taught must be determined in advance, and proper contents (context) must be developed. Subsequently, the audiovisual and design-based infrastructure (design), on which said questions will be provided, must be built and applied, the results obtained must be evaluated, and eventually, the process must be run in such cycles.

It must be stated that today's distance education process provides learners with convenience in many aspects. According to Oliveria et al. (2018), distance education offers specific advantages, as shown below:

- ✓ Flexibility: The concept of physical classroom with no harsh rules. Distances brings along adaptability.
- ✓ Accessibility to Content: In a conventional classroom setting, it is usual to assign writing tasks, which then would be recorded; however, in distance education, content sound and videos can be used as well.
- ✓ Low Prices: Prices for learning are generally cheaper, compared to conventional classrooms, and there are numerous different price alternatives.
- ✓ Access from Home Anytime You Wish: Considering the fact that many people are required to work, having access to courses at will appears as a significant advantage.

Thus, as mentioned above, a quality distance education process is expected to yield specific financial and moral advantages. Nonetheless, one must not ignore the fact that the distance education process might cause users to have various challenges in specific aspects. These challenges can be generally classified as technical challenges (lack of infrastructure and instruments), organizational challenges (standards, rules, and regulations), and educational challenges (methods of learning, psychological) (Pardanjac, 2009).

The pandemic period has showed that it is significantly needed to set up a reliable infrastructure in order to be able to plan and offer high quality education through distance education for schools, for universities, as well as for graduate schools In addition, it can be reasonable to investigate how all educational activities, provided through distance education, are perceived by students, student teachers, and teachers in order to create specific action plans. The feedbacks obtained this way, will be quite helpful overcome the deficiencies, and to make future plans in an effective and realistic manner.

In this study, the main research question of the study was formulated as "***How would student teachers score their attitude in regards to the distance education courses they attended?***" Based on this main research question, the sub-research questions were identified as in the following:

Do student teachers' attitude towards distance education differ significantly in terms of their;
>   a. gender?
>   b. previous training on computers (web-animation-graphic design, etc.)?
>   c. possession of such devices as smart phones, tablet computers or laptop?
>   d. region of residence?
>   e. place of residence?
>   f. department?

2. Method

2.1. Study model

This descriptive study was based on the survey method, one of the quantitative research designs. The survey model offers a suitable model for studies, which aim to describe a past or current situation as it is (Karasar, 2006). The study is of the cross-sectional model, as it expresses the situation at any given moment, and not the change over time. The purpose of the cross-sectional survey model is to define the situation of the surveyed phenomenon at any given moment, or to take a picture of the same at that moment (Buyukozturk et al., 2012; Ozdemir, 2015).

2.2. Participants

The participants of the study were selected randomly on voluntary basis, and they consisted of a total of 236 student teachers (140 females and 96 males) in five different departments of the Faculty of Education in a state university in the south of Turkey in the 2019-2020 academic year. The demographic information about the participants is given in the following tables below (See Tables 1,2).

Table 1. Distribution of Participants by Department

Departments	Frequency (n)	Percentage (%)
Elementary School Mathematics Teaching	76	32,2
Guidance and Psychological Counselling Teaching	66	27,96
Turkish Language Teaching	39	16,52
Physical Education and Sports Teaching	29	12,28
Science Teaching	26	11,01
Total	**236**	**100**

The study covered student teachers from five different departments with the highest number from the Department of Elementary School Mathematics Teaching.

Table 2. Distribution of Participants by Gender

Gender	Frequency (n)	Percentage (%)
Female	140	59,32
Male	96	40,67
Total	**236**	**100**

Considering the gender distributions of the participants, it can be seen that the number of females were higher than males.

2.3. Data Collection

The data collecting tools of the study were composed of a data form and "The Distance Education-Oriented Attitude Scale". The links of the form and the scale were emailed to randomly selected student teachers. Of these students, those who fully answered the questions were included as the participants in the study. The detail about the data collection tools are as follows:

- *Data Form:* The form included six questions directed to students in order to collect information on various issues. The questions consisted of topics, such as whether they had previously received computer trainings on any area, whether they had any computers or laptops, the regions of residence of the students, the places of residence of the students, and the university departments of the students.

- *Distance Education-Oriented Attitude Scale:* The "Distance Education-Oriented Attitude Scale", used within the study, was developed by Kısla (2016), and its validity and reliability studies were conducted as follows:

  First, the scale trial form was administered to 121 students. Then the Exploratory Factor Analysis (EFA) was conducted, and the load values of the items were between .30 and .74, and the factor explained 28 % of the total variance. According to the CFA results, it was seen that all fit indexes (GFI 0.90 RMSEA: 0.021) That was an acceptable set of values. Internal consistency factor (Cronbach Alpha) was determined as .89. After that process the 5-point Likert scale with 35 items was created.

2.4. Data Analysis

A potent data analysis software being used in social sciences, the SPSS (Statistical Package for Social Sciences) 25.0 software was employed in order to analyze and interpret the data. Before proceeding to the data analysis process, the data were tested for normality, which subsequently showed that the data were distributed normally;

furthermore, reverse items were corrected, and the calculations were made accordingly. During the evaluation of the data, those that were descriptive were expressed in the form of mean, percentile, number, standard deviation, etc. While creating the quantitative data, the Independent Samples t-Test was employed for independent groups in dual comparisons, whereas the One-way Anova was used to make multiple comparisons. In order to determine the group causing the difference, however, the Tukey test was employed, and the findings were set in a confidence interval of 95%, with the level of error taken as 0.05.

3. FINDINGS

The findings of the study can be stated as in the following.

3.1. The participants' level of the attitude toward distance education was evaluated via the Five-Point Likert Scale, used in the study. The reflections meant in the order of "strongly agree" (5) to "strongly disagree" (1). During the evaluation of these expressions, the mean score for each student was obtained through the divisions of the total points the student scored by the total number of questions. The results obtained were averaged in order to determine the Level of Distance Education-Oriented Attitudes (LDEOA), and an evaluation was made accordingly.

Table 3. Level of Distance Education-Oriented Attitudes (LDEOA)

	N	X	Sd	Min.	Max.
LDEOA	236	3.63	0.68	1.2	4.86

Considering the table, the mean attitude score (X) of the students attending the study was determined to be 3.63. While the minimum score (min.) was 1.2, the highest score (max.) reached 4,86. Considering the distribution of frequency of the scores, it can be seen that the general accumulation took place in middle sections, whereas the points scored by maximum number of individuals were found to be 3.57 and 4.45.
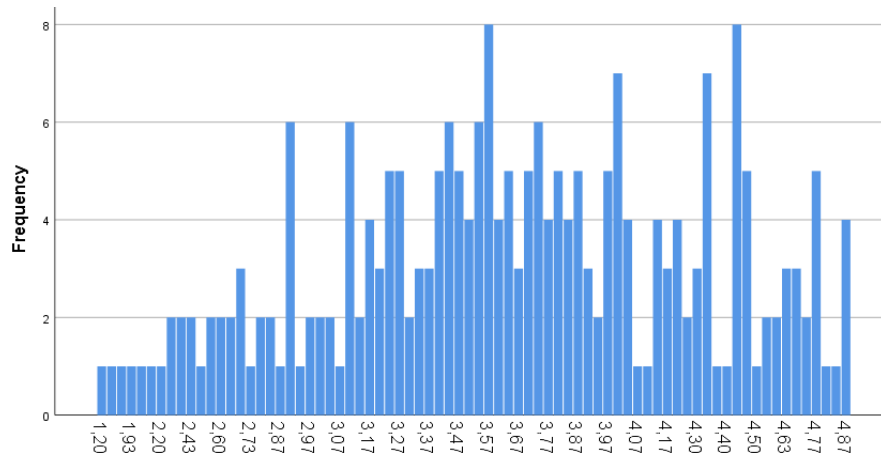
Figure 4. Distribution of Distance Education-Oriented Attitude Scores of
Participants

Upon the analysis of the general attitude, it can be seen that the distance education-oriented attitude score (3.63) is in the highest interval of scores. It can be inferred that the satisfaction was at high levels, as this rate corresponds to 72.6%.
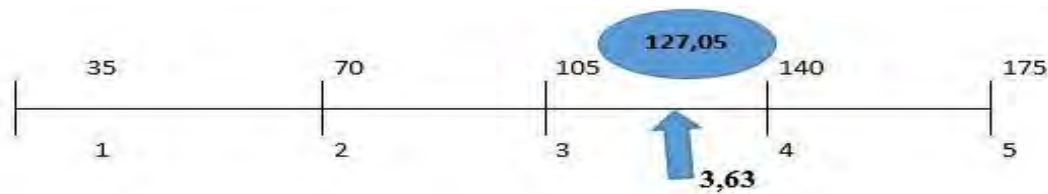

Figure 5. Demonstration of the Mean of Total Score of Attitude

While evaluating the score intervals, the order followed was 1.0 - 1.79 "Too low", 1.80 - 2.59 "Low", 2.60 - 3.39 "Moderate", 3.40 - 4.19 "High", 4.20 - 5.00 "Too high".

The following findings are presented in the order of sub-research questions.

3.2. Do student teachers' attitude towards distance education differ significantly in terms of their gender?

Table 4. T-Test Results of LDEOA Scores by Gender

Gender	N	X	Sd	T	P
Female	140	3.7	0.62	1.87	0.62
Male	96	3.5	0.75		

Upon the analysis of Table 4, it can be seen that the distance education-oriented attitude score did not create any significant differences by gender (p>0.05). The mean scores were

close to one another (female 3.7 - male 3.5). The distance education-oriented attitude score was not expected to create any differences by gender, and the results support this prediction.

3.3. Do student teachers' attitude towards distance education differ significantly in terms of their previous training on computers (web-animation-graphic design, etc.)?

Table 5. T-Test Results of LDEOA Scores by the Status of Having Received Computer Training

Previous Computer Training	N	X	Sd	T	P
Yes	58	3.57	0.71	-767	0.445
No	178	3.65	0.67		

Upon the analysis of Table 5 can be seen that the distance education-oriented attitude score did not create any significant differences by any previous computer training (p>0.05). Nonetheless, prior to the study, it had been considered that previous computer training could positive affect the attitude score. The study results did not support this expectation, yet it is seen that mean values were close to one another. It is believed that distance education-oriented attitude is negatively affected by the boredom caused by training received, the way the training was conducted (voluntary-compulsory), the teacher's quality, problems experienced (software- or hardware-related).

3.4. Do student teachers' attitude towards distance education differ significantly in terms of their possession of such devices as smart phones, tablet computers or laptop?

Table 6. T-Test Results of LDEOA Scores by the Possession of Smart Phones, etc.

Possession of Smart Phones, etc.	N	X	Sd	T	P
Yes	231	3.64	0.68	0.389	0.716
No	5	3.48	0.92		

Upon the analysis of Table 6 it can be seen that the distance education-oriented attitude score did not create any significant differences by the possession of hardware, such as smart phones, tablets, computers, etc. (p>0.05). Nevertheless, prior to the study, it was believed that the possession of technological instruments, such as smart phones, tablets, computers, etc., could positively affect the attitude. The study results did not support this prediction. It can be considered that "developing negative attitudes towards technology", such as the aforementioned reasons, negatively affected the attitude towards distance education.

3.5. Do student teachers' attitude towards distance education differ significantly in terms of their region of residence?

Table 7. One-Way Anova Results of LDEOA Scores by the Region of Residence

Regions	N	X	Sd	F	P
Mediterranean Region	122	3.65	0.72		
Eastern Anatolia Region	10	3.76	0.572		
Aegean Region	25	3.44	0.551		
Southeastern Anatolia Region	23	3.69	0.617	1.473	0.188
Black Sea Region	13	3.25	0.64		
Marmara Region	13	3.66	0.812		
Central Anatolia Region	30	3.82	0.645		

Upon the analysis of Table 7 can be seen that the distance education-oriented attitude score did not create any significant differences by regions (p>0.05). Nonetheless, prior to the study, upon the analysis of the economic and physical differences between the geographical regions in Turkey, the regions with infrastructure problems in internet and communication had been expected to have a low attitude towards distance education. As per the study results, the highest scores of attitude were in the Central Anatolia and Eastern Anatolia Regions, while the lowest attitude scores were in the Black Sea and Aegean Regions. Moreover, it can be seen that the regions did not create any significant differences in terms of attitude scores among themselves. Therefore, it can be said that the distance education-oriented attitude did not create any considerable difference between the regions.

3.6. Do student teachers' attitude towards distance education differ significantly in terms of their place of residence?

Table 8. One-Way Anova Results of LDEOA Scores by the Place of Residence

Places of Residence	N	X	Sd	F	P	Difference (Tukey)
Metropolitan Center	52	3.85	0.663			
Provincial Center	34	3.65	0.637			
District Center	95	3.5	0.721	3,028	0.03	1>3
Town-Village-Neighborhood	55	3.64	0.629			

When Table 8 is analyzed, it can be seen that the difference between group averages was not statistically different, as a result of the one-way variance analysis (ANOVA). It can be understood that the distance education-oriented attitude score caused a significant difference based on the place of residence (p=0.03 < 0.05). A post-hoc analysis (Tukey) was carried out in order to determine the causes of said differences. It can be seen that the attitude scores of the students living in metropolitan centers (3.85 ±0.0663) were higher, compared to those of the students living in district centers (3.50 ±0.721). This difference is believed to be in favor of metropolitan centers, due to factors, such as access to internet and computers being more difficult in district centers, compared to metropolises. Nevertheless, even though the attitude scores were expected to decline in towns, villages and boroughs, the exact opposite happened, and the attitude score averages in district centers (3.50) fell below the attitude score averages of the villages, towns and boroughs (3.64). Considering the attitude score averages of those living in provincial centers, however, it can be seen that they had the second highest attitude score averages (3.65), after metropolitan centers.

3.7. Do student teachers' attitude towards distance education differ significantly in terms of their department?

Table 9. One-Way Anova Results of LDEOA Scores by the University Departments

Departments	N	X	Sd	F	P	Difference (Tukey)
(1) Turkish Language Teaching	39	3.88	0.732			
(2) Secondary School Mathematics Teaching	76	3.51	0.606			1 > 2
(3)Psychological Counseling and Guidance	66	3.80	0.645	4.439	0.002	1>4
(4) Science Teaching	26	3.36	0.695			3>4
(5) Physical Education and Sports Teaching	29	3.51	0.74			

The difference between the group averages were found to be statistically significant (F=4.439; p=0.002<0.05), as a result of the one-way variance analysis (ANOVA) that was carried out in order to determine whether the attitude score averages of the participating students showed any significant differences based on their faculties. A post-hoc analysis (Tukey) was carried out in order to determine the causes of said differences. It was seen

that the attitude scores of the students of the Turkish Language Teaching department (3.88 ± 0.732) were higher, compared to the students of other faculties or colleges. Furthermore, it can be seen that the attitude scores of the students of the psychological counselling and guidance department were similar to the department of Turkish Language Teaching (3.80± 0.645), and that they created a significant difference, compared to the attitude score of the department of science teaching (3.36± 0,695). It is notable that the attitude scores of the departments of Turkish Language Teaching and Psychological Counselling and Guidance were high, while the attitude scores of the department of Science Teaching were low. The decline in the scores of attitude towards technology-based teaching in the departments educating Science and Technology teachers is an issue that specifically needs to be researched. It is required to proceed to specific data obtained from the study questionnaire, in respect of the attempts to define and explain this situation. Based on the answers they gave for the question directed on this subject matter, it is understood that the students of the science and technology department had not previously taken part in any computer training.
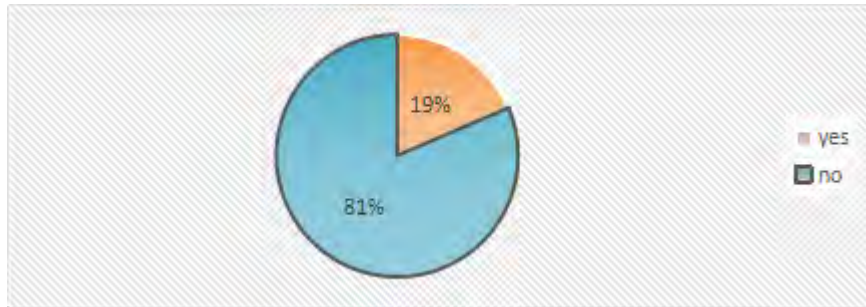

Figure 6. Answers Given by the Students of the Science and Technology Department to the Question of Whether They Had Previously Been Trained on Computers

Moreover, it can also be seen that the students of said departments substantially had and used technological instruments (telephones, tablets, and laptops).
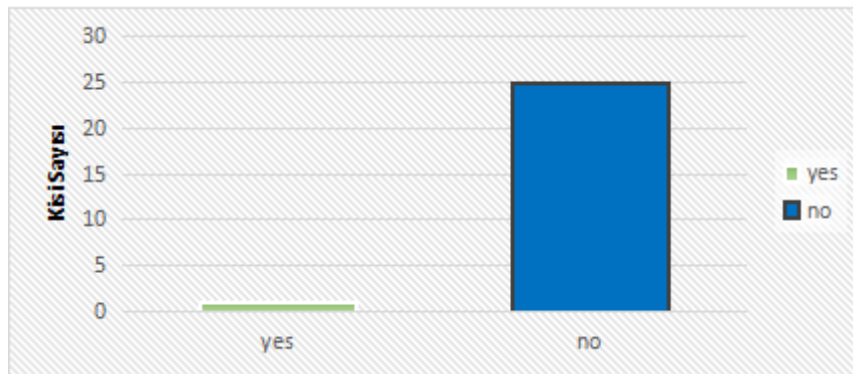
Figure 7. Answers Given by the Students of the Science and Technology Department to the Question as to the Possession of Smart Phones, Tablet Computers, or Laptops

Under the light of these data, and based on the fact that the students of the Science and Technology Department did not take part in computer training, it is believed that they had a low level of knowledge of technology, which affected the attitude score. Nonetheless, it was observed that the use of computers, tablet, laptops, or smart phones were also quite high, as was the case in all departments quite commonly.

4. Discussion and Conclusion

As a result of the study, it could be seen that the attitude score averages were high (3.63), following the evaluation of the distance education-oriented attitude scores of the students. Accordingly, it is possible to state that the students were generally satisfied with the distance education process. In support of the research, in a study conducted by Ozgol et al. (2017) to determine the distance education-oriented opinions of students, it was seen that students were satisfied with this type of teaching and that they wanted to receive distance education. Moreover, students reported that the most advantageous part of distance education consisted of its attribute of being independent of time and space, as well as the time savings that it provided, in addition to the opportunity to revising the classes. Similarly, in a number of studies conducted, it can be seen that positive results were obtained in regards to distance education (Beaudoin et al., 2009; Nasser & Abouchedid, 2000; Gokbulut, 2020; Koc, 2020; Senturk, 2020). In general, the fact that distance education is independent of time and space, that it provides a flexible work setting, that it is repeatable, that is less boring thanks to the colorful contents created by audiovisual means, as well as being more economical, are among the strong aspects of distance education. There are some studies as well, where students reported that distance education brought some disadvantages along with the advantages, and that they were undecided on this matter. In a study conducted by Fidelgo et al. (2020) in regards to the distance education-oriented perceptions of students in Portugal, United Arab Emirates and Ukraine, it can be seen that students were worried about distance education in terms of time management, motivation, and language development. However, despite these concerns, it is understood that students wanted to see distance education as a part of teaching strategies. In similar studies, it was reported that distance education was bilateral, offering both advantages and disadvantages, and that it must be available on condition that its deficiencies are reduced or that it must be used for specific courses (Barış & Cankaya, 2016; Agır et al., 2007).

Nevertheless, there are also studies, where downsides of distance education stood out and the participants had low levels of satisfaction. In a study conducted by Genc & Gumrukcuoglu (2020) to measure the levels of satisfaction of the students of the faculty of theology regarding the process of distance education, taking place in universities due to the Coronavirus pandemic, it could be seen that the majority of the students were not satisfied with distance education. Negative opinions on distance education seem to be gathered under the topics of not being able to socialize, dissatisfaction caused by staying away from students and teachers, and not being able to have the interaction offered by face-to-face education. There are some other study results that are similar to this one (Yavuz, 2016; Karatepe et al., 2020). It is reported that communication based on face-to-face education is more effective, and that a live class ensures more permanent learning thanks to its aspects of asking questions, focusing, etc. Furthermore, it is understood that hardships, caused by hardware and infrastructure deficiencies, lower the quality of distance education, and that there are specific drawbacks as to social skills not being able to develop through distance education.

Prior to the study, the distance education-oriented attitude score was not expected to create any differences by gender, and the results supported this prediction. Similarly, some other studies concluded that there were no differences in opinions on distance education based on gender (Fidan, 2016; Yavuz, 2016). On the contrary, it can be seen that some studies reached different results. In a study they conducted to determine the attitudes of teacher candidates towards distance education, Yenilmez et al. (2017), found that male teacher candidates had higher attitude scores, compared to female teacher candidates. Similarly, in a study they conducted, Ates & Altun (2008) concluded that men had a higher attitude score. On the contrary, in a study conducted by Bicer (2019), it was concluded that women had higher attitude scores in regard to remote learning, compared to men. Even the study carried out by Ozen & Baran (2020) with the same participants, yielded results that could be in contradiction with one another in specific items regarding distance education. For instance, unlike men, even though women believed that those taking part in distance education were sufficient in terms of knowledge and skills, it was seen that they were less willing to take distance education, compared to men. Therefore, whether distance education-oriented attitude score creates any significant difference by gender, varies by different studies, and it would be incorrect to state the gender, in general, is effective over the distance education-oriented attitude.

Prior to the study, it was believed that having previous computer training would positively affect the attitude score, because in a study conducted by Yılmaz & Guven (2015), it was reported that having any knowledge of distance education applications was effective in developing positive perception regarding distance education. The study

results did not support this prediction. It was seen that the previous trainings did not positively affect the attitude and that the students with such trainings had low distance education-oriented attitude scores. Similarly, prior to the study, it was believed that having technological instruments, such as smart phones, tablets, computers, etc., would positively affect the attitude score, yet the results did not support this prediction either. Hence, as a consequence of the study, it was concluded that "experience and knowledge of technology" negatively affected the opinions on distance education. Possible reasons of this case could include the boredom caused by the frequent use of technology, as well as the negativities in the execution of the previous trainings attended by students, the deficiencies in teachers' qualities, and the software or hardware problems experienced by students during the process.

There are two main topics, which are software and hardware, in regards to conduct distance education; internet connection, included in the topic of hardware, is one of the important infrastructure factors (Gurol & Sevindik, 2004). It is known that the internet connection in our country is deficient and has differences based on regions. It can be seen that Istanbul, one of the cities with the most advanced internet infrastructure in Turkey, falls behind Stockholm by two hundred times, and that there are significant differences between regions (for instance, the length of internet fiber infrastructure per capita by population in Gaziantep and Urfa, is almost half of what Antalya and Adana have) (TELKODER, 2019). Therefore, prior to the study, regional internet infrastructure problems were expected to have a negative impact over the distance education attitude score, because in a study conducted by Barış (2016), it was reported that those with constant internet access had higher distance education-oriented attitude scores, compared to those who did not; nevertheless, as a result of an analysis (See Table 7. One-Way Anova Results of LDEOA Scores by the Region of Residence) it could be seen that no significant differences occurred between the regions. As a result of the study, in support of the aforementioned report, a difference was spotted between the mean distance education attitude score of the Mediterranean Region (3.65) and that of the Southeastern Anatolia Region (3.69); nevertheless, this difference was not at significant levels. In a similar manner to this result, the attitude score was believed to be in favor of metropolitan centers, based on the prediction that the internet access in district centers would be more challenging compared to metropolises due to the problems in the internet infrastructure; nevertheless, even though the attitude scores were expected to decline in towns, villages and boroughs, the exact opposite happened, and the attitude score averages in district centers (3.50) fell below the attitude score averages of the villages, towns and boroughs (3.64). Considering the attitude score averages of those living in provincial centers, however, it can be seen that they had the second highest attitude score averages (3.65), after metropolitan centers. As per the study results, the distance

education-oriented attitude could not be affected by the internet infrastructure problems of the regions; it is believed that more elaborate studies must be conducted to this end.

Prior to the study, it was believed that the students of the department of science and technology teaching would have higher distance education-oriented scores, compared to other departments, based on the assumption that departments to lead in the fields of technology would be more curious and interested. For instance, in a study conducted by Durmus & Bagcı (2013), it could be seen that the attitudes of teacher candidates from the department of computer and teaching technologies towards web-based teaching were more positive, compared to those of teacher candidates from other departments, who took part in the study. As per the study results, it was found that the students from the departments of Turkish Language Teaching and psychological counselling and guidance had significantly higher attitude scores, compared to the students from the department of science and technology teaching, which in turn did not support the pre-study assumptions. In a study conducted by Uzoglu (2016) to research the distance education-oriented opinions of science teacher candidates, it could be seen that the teacher candidates reported that there were advantages and disadvantages to distance education; the study results were close to the research in question.

It is notable that the attitude scores of the students from the department of Turkish Language Teaching (3.88 ± 0.732) were higher than those of the students from other departments, because similarly, in a study conducted by Karakus et al. (2020) in regards to the distance education-oriented opinions of the students of the department of Turkish Language Teaching, an opposite result was obtained, and it was concluded that Turkish teacher candidates could not adapt to the distance education process that took place upon sudden developments, that they thought it was not possible to conduct a skill-based course through distance education, and that they recommended the return of the face-to-face education as soon as possible. Contrary to this conclusion, the study results show that the students of the department of Turkish Language Teaching had the highest attitude scores. Therefore, it is possible to state that students of this department find distance education classes to be of higher quality, compared to students from other departments, and that they are satisfied with distance education.

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