

## Evaluation of Higher Education Students' Distance Education Experiences During and After the Pandemic Period

### Yükseköğretim Öğrencilerinin Pandemi Dönemi ve Sonrası Uzaktan Öğretim Deneyimlerinin Değerlendirilmesi

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#### ABSTRACT

In the study, it was aimed to evaluate the distance education activities of university students during and after the pandemic period. For this purpose, a survey model, a quantitative research method, was used. To evaluate the distance education attitudes of the students, the 15-item "Distance Education Evaluation Scale" was applied to 524 students during the pandemic period and 1095 students after the pandemic. The data obtained were analyzed using both descriptive and predictive methods. As a result, the analysis observed a significant difference between the groups regarding variables such as the units where the students studied, their education levels, class levels, gender, and age groups. However, when the scores of the students with distance education experience and those without experience were compared, no statistically significant difference was found between the groups. As a result, it is suggested that new studies should be carried out to develop innovative methods to improve students' distance education evaluation scores and make more effective and interesting distance education activities. In addition, it is recommended to carry out new studies, including different provinces with the transition of educational activities after natural disasters such as earthquakes to emergency distance education.

**Keywords:** Covid-19, pandemic, distance education, emergency remote teaching, higher education.

#### ÖZ

Çalışmada pandemi dönemi ve sonrası üniversite öğrencilerinin uzaktan öğretim faaliyetlerinin değerlendirilmesi amaçlanmıştır. Bu amaç kapsamında çalışmada nicel araştırma yöntemlerinden tarama modeli kullanılmıştır. Öğrencilerin uzaktan öğretim tutumlarını değerlendirmek amacıyla 15 maddelik "Uzaktan Eğitim Değerlendirme Ölçeği" pandemi döneminde 524 öğrenciye, pandemi sonrasında 1095 öğrenciye uygulanmıştır. Elde edilen veriler hem betimsel hem de kestirimsel yöntemler kullanılarak analiz edilmiştir. Analiz sonucunda öğrencilerin öğrenim gördüğü birimler, öğrenim düzeyleri, sınıf seviyeleri, cinsiyet ve yaş grupları gibi değişkenler açısından gruplar arası anlamlı farklılıklar gözlenmiştir. Fakat uzaktan öğretim deneyimi olan öğrenciler ile deneyimi olmayan öğrencilerin puanları kıyaslandığında ise gruplar arasında anlamlı bir fark bulunmamıştır. Sonuç olarak öğrencilerin uzaktan öğretim değerlendirme puanlarının iyileştirilmesi amacıyla uzaktan öğretim faaliyetlerinin daha etkin ve ilgi çekici olması için yeni

yöntemlerin geliştirilmesine yönelik çalışmaların yapılması önerilmektedir. Bununla birlikte deprem gibi doğal afetler sonrası eğitim faaliyetlerinin acil uzaktan öğretime geçmesi ile farklı illeri içeren yeni çalışmaların yapılması tavsiye edilmektedir.

**Anahtar Kelimeler:** Covid-19, pandemi, uzaktan öğretim, acil uzaktan öğretim, yükseköğretim.

## INTRODUCTION

As in the world, with the COVID-19 pandemic in our country, switching from face-to-face education to distance education at all levels has become obligatory (UNESCO, 2020). This situation has brought about many changes. Both academics and students had to change their habits and routines and switch to online teaching quickly (Migocka-Patrzałek et al., 2021). As education stakeholders rethink how to make the most of online teaching, educators alike have had the opportunity to review critical assumptions about how they teach and how students learn (Jowsey et al., 2020). This situation shows that educators should keep up with changing technology, learning theories and changing educational needs of students (Poon, 2013). Many factors influence effective learning in an online environment, including the design of instructional activities, technical problems, support mechanisms, and communication strategies (student-teacher and student-student) (Jowsey et al., 2020).

Although distance education activities that emerged during the pandemic are perceived to be similar to traditional distance education activities, these two processes are distinct (Bozkurt, 2020). Distance education activities that emerged during the crisis were defined as emergency distance education (Hodges et al., 2020). Due to this emergency, many educational institutions have adopted distance learning to keep up with COVID-19 (Alqurshi, 2020; Kawaguchi-Suzuki et al., 2020; Yavuz et al., 2020). Furthermore, in the pre-pandemic period, distance instruction was used to support face-to-face education and to provide an alternative learning environment for disadvantaged groups. With the pandemic, it has become a necessity rather than a choice because the restrictions in the ordinary flow of life have shown themselves in education as in many sectors. This situation made it necessary to carry out synchronous and asynchronous teaching-learning activities with the help of distance education tools (Kayalı, 2020).

Higher education has been among the most prepared sectors to continue most of its processes with distance education (Grynyuk et al., 2022). The effectiveness of distance education depends on the joint efforts of university administration, teaching staff and all university departments without exception (Marinoni et al., 2020). As in every level, many factors impact the process for the teaching and learning activities to be realized in the desired effectiveness and efficiency in higher education. These include the knowledge skills of the instructors concerning distance education, the readiness of the students, the technical equipment, the distance connection speed, the suitability of the course contents to the distance education, in-class discussion, interaction, cooperation, many factors such as.

Considering the studies in the literature, it is stated that the attitudes and satisfaction of the instructors towards distance education methods are of great importance in terms of students' motivation and achievements (Migocka-Patrzałek et al., 2021). Another study stated that students at most education levels experience psychological stress due to the sudden transition from traditional methods to distance education in providing learning. Both academics and students had to switch to online teaching by quickly changing their habits and routines (Migocka-Patrzałek et al., 2021). Again, the same study found that due to the sudden transition to distance education with the emergence of COVID-19, educators do not have enough time to prepare a curriculum suitable for distance education. Additionally, it is asserted that for students to learn effectively in a far-off place, they should possess various learning qualities, including independent learning, effective communication, and the courage to ask for help when needed (Mohamed et al., 2021).

Murphy (2020) emphasized that extraordinary times require extraordinary measures. All stakeholders, including educators and students, have tried to use e-learning systems and technologies effectively to minimize the gap created by current health conditions (Worldbank, 2020). In traditional education, educators use distance learning to integrate different learning strategies into their planning. This situation forces educational institutions to create an instant learning environment different from traditional classrooms. Thus, they were forced to adopt unprecedented strategies to make distance learning possible rapidly (Meirovitz et al., 2022).

Considering that disasters such as fire, flood and epidemic in recent years have caused concerns about public health and safety, it can be said that it is necessary and essential to continue emergency distance learning applications after the epidemic (Samson, 2020). The earthquakes of 7.7 and 7.6 magnitudes, defined as the century's disaster and, occurred on February 6, 2023 in Türkiye, caused an unprecedented disaster. For this reason, The Council of Higher Education determined that the spring semester of the academic year 2022–2023 should be completed through distance learning due to the effects of the Kahramanmaraş-centred earthquake throughout the nation (YÖK, 2023). In addition, the study is essential in determining whether the distance education activities carried out in different periods differ in variables such as the field of study, education level, age, gender, and previous distance education experience. In this context, it aimed to evaluate university students' distance education activities during and after the pandemic. For this purpose, answers to the following research questions were sought.

RQ1. Is there a significant difference in the distance education evaluation scores of the pandemic period students and post-pandemic students?

RQ2. Is there a significant difference in the distance education evaluation scores of the students according to the unit (Faculty/Vocational School) factor?

RQ3. Is there a significant difference in the distance education evaluation scores of the students according to their education level (Associate/Bachelor's)?

RQ4. Is there a significant difference in the distance education evaluation scores of the students according to the grade level?

RQ5. Is there a significant difference in the distance education evaluation scores of the students according to the gender factor?

RQ6. Is there a significant difference in the distance education evaluation scores of the students according to the age factor?

RQ7. Is there a statistically significant difference in the distance education evaluation scores according to the distance education experience of the students?

## **METHOD**

The survey model, which is one of the quantitative research methods, was used within the scope of the evaluation of the distance education activities of university students during the pandemic period and after the pandemic. The screening model is used in studies aiming to collect data to determine the specific characteristics of a group (Büyüköztürk et al., 2018).

### **2.1. Workgroup**

The research sample consists of the 1st year students (pandemic period students) who registered at Bingöl University in the 2021-2022 academic year and the 1st, 2nd and 3rd year students who are active in the 2022-2023 academic year fall semester (post-pandemic period students).

The study data were collected with the help of the scale, which is frequently used in social sciences. For this purpose, students studying in 15 different units (Faculty/Vocational School) participated in the Canvas platform, a learning management system. Seven hundred-three students

from the pandemic period participated in the scale, and 524 answered all the questions. In the post-pandemic period, 1104 students participated in the scale, but 1095 answered all the questions. The data of the students who did not answer the questions or did not fill in all of them were not used in statistical tests. Descriptive information about the students who made up the sample is given in Table 1.

**Table 1**

*Distribution of the Individuals in the Sample by Units and Gender*

Faculty/Vocational School	Pandemic Period			Post Pandemic			Total		
	M	F	T	M	F	T	M	F	T
Faculty of Dentistry	8	12	20	13	24	37	21	36	57
Faculty of Arts and Sciences	15	29	44	55	195	250	70	224	294
Genç Vocational School	23	22	45	40	27	67	63	49	112
Vocational School of Food, Agriculture and Livestock	6	6	12	19	14	33	25	20	45
Faculty of Economics and Administrative Sciences	2	0	2	17	9	26	19	9	28
Faculty of Islamic Sciences	1	0	1	23	62	85	24	62	86
Faculty of Engineering and Architecture	2	0	2	35	17	52	37	17	54
Faculty of Health Sciences	6	30	36	34	64	98	40	94	134
Vocational School of Health Services	50	109	159	73	134	207	123	243	366
Solhan Solhan Vocational School of Health Services	3	10	13	13	49	62	16	59	75
Vocational School of Social Sciences	69	58	127	31	41	72	100	99	199
Sports Science Faculty	11	3	14	30	27	57	41	30	71
Vocational School of Technical Sciences	22	6	28	25	16	41	47	22	69
Faculty of Veterinary Medicine	8	11	19	2	0	2	10	11	21
Faculty of Agriculture	1	1	2	2	4	6	3	5	8
<b>Total</b>	<b>227</b>	<b>297</b>	<b>524</b>	<b>412</b>	<b>683</b>	<b>1095</b>	<b>639</b>	<b>980</b>	<b>1619</b>

M: Male, F: Female, T: Total

## 2.2. Data Collection Tools

The "Distance Education Assessment Scale" developed by Özkul et al. (2020) was used in the study. The scale used has two factors: technique and learning process. The scale consists of 15 items. According to Özkul et al. (2020), the acceptable cronbach's alpha value of the scale is between ".96" and ".89". This study calculated the scale's reliability after application as ".95".

The scale designed for students receiving synchronous and asynchronous education consists of two parts. In the first part, some questions determine the demographic characteristics of the students. In the second part, there are questions to examine the students' perceptions about the synchronous and asynchronous courses they take. The second part is in a 5-point Likert type, comprising 15 items. In this section, students are asked to indicate their agreement with the statement explained. Scoring of the scale is from 1 to 5; it was coded as Strongly Disagree, Disagree, Undecided, Agree and Strongly Agree.

In the scale, the participants were asked about demographic information such as gender, age, the department they are enrolled in, whether they have distance education experiences, and how the exams should be done.

## 2.3. Data Analysis

The obtained data were analyzed with the IBM SPSS 22.0 program. Both predictive and descriptive methods were used to analyze the data. For this purpose, descriptive statistics were employed. In addition, various statistical techniques were applied to compare the groups. As a result of the normality test performed in this direction, it was revealed that the data were not normally distributed ( $p < .05$ ). However, when the results such as skewness, kurtosis and histogram are examined, it can be said that the data are normally distributed. A kurtosis value of  $\pm 1.0$  is usually considered excellent. However, depending on specific applications, a value between  $\pm 2.0$  is also accepted in many cases (George & Mallery, 2012). For this reason, parametric tests were preferred in this study.

The t-test was applied to independent samples to compare binary groups such as the evaluation score, gender, experience, and education status (Bachelor/Associate Degree) during and after the pandemic. Variance analysis techniques were applied to compare more groups based on their age group and the unit they belong to (Faculty/Vocational School). Tukey's HSD, one of the post-hoc analyses, was used to determine the significant differences between the groups.

Even minimal differences between groups in large samples can be statistically significant; the presence of a statistical difference does not mean that this difference has any practical or theoretical significance. The situation that the probability values cannot explain is how much the two variables are related to each other. The effect size can be explained as the standardization of the difference between the means. In addition, the effect value is a statistic that shows the total amount of variance in the dependent variable that can be estimated from the levels of the independent variable (Tabachnick & Fidell, 2013). Partial eta-square ( $\eta^2$ ) values, which are the effect sizes, were also calculated to comment on whether the difference between the groups was statistically significant. It did not happen by chance (Pallant, 2017). The effect size is classified as small effect up to .01, medium effect up to .06, and large effect up to .14 (Cohen, 2013).

## RESULTS

This study aimed to evaluate the distance education activities of university students during and after the pandemic. For this purpose, a Distance Education Evaluation Scale was applied, and the obtained data were analyzed using statistical tests. The mean and standard deviation values for each item are presented in Table 2.

**Table 2**

*Distance Education Evaluation Scores of Students During and After the Pandemic Period*

Items	PP <i>M±Sd</i>	P-P <i>M±Sd</i>
1. I was able to access the courses given by distance education whenever I wanted.	3.41±1.17	3.51±1.23
2. I was able to access the courses given by distance education from anywhere I wanted.	3.28±1.18	3.34±1.26
3. It was easy for me to access the courses given by distance education.	3.21±1.18	3.32±1.23
4. I had information about the application calendars of the courses given by distance education.	3.44±1.14	3.48±1.14
5. I use the preferred online platforms (Ms Teams, Mergen, etc.) effectively in distance education.	3.55±1.10	3.39±1.20
6. I get technical support when I have difficulties in accessing the courses given by distance education.	3.20±1.14	3.17±1.20
7. Distance education is efficient in terms of learning processes.	2.87±1.32	2.86±1.34
8. The distance education process increases my motivation to learn.	2.72±1.32	2.75±1.34
9. I evaluate my own learning process through distance education.	3.13±1.18	3.25±1.21
10.Distance education is suitable for my learning characteristics.	2.94±1.27	2.98±1.30
11.The distance education process encourages me to learn new things.	2.89±1.26	2.99±1.30
12.Distance education facilitates my permanent learning.	2.68±1.29	2.71±1.30
13.Distance education courses contribute to my personal and professional development.	2.87±1.27	2.91±1.28
14.The instructional design of the courses given by distance education is effective.	2.90±1.23	2.98±1.25
15.Distance education enriches my learning process.	2.88±1.26	2.87±1.31
<b>Mean</b>	<b>3.07±.91</b>	<b>3.10±.98</b>

PP: Pandemic Period, P-P: Post Pandemic, *M*: Mean, *Sd*: Standart Deviation

When the distance education evaluation scores of the students were examined during the pandemic, the item "5-I use the online platforms (MS Teams, Canvas, etc.) preferred in distance education effectively" got the highest value with a mean of 3.55±1.10. The item "12- Distance education facilitates my permanent learning" got the lowest value with a mean of 2.68±1.29. In

the post-pandemic period, it is seen that the students' views are similar to those of the students during the pandemic period. In the post-pandemic period, the item “12- Distance education facilitates my permanent learning” got the lowest value with a mean of  $2.71 \pm 1.30$  as in the students of the pandemic period. The item “1-I was able to access the courses given by distance education whenever I wanted” got the highest value with a mean of  $3.51 \pm 1.23$ .

### 3.1. RQ1. Examining the Distance Education Evaluation Scores of the Students in the Pandemic Period and Post-Pandemic Students

The scale score was calculated by taking the mean of all the items answered for each student (N=1619) who participated in the scale. Thus, the distance education evaluation score, a new continuous variable, was obtained and used in data analysis. Of the 1619 students who participated in the scale, 32.4% (524) were students during the pandemic, and 67.6% (1095) were post-pandemic students. The mean of the calculated evaluation scores ( $3.09 \pm .96$ ) shows that the students are generally undecided in their attitudes towards distance education. Considering the mean scores of the 15 items in both the pandemic period and the post-pandemic period ( $M_{PD}=3.07 \pm .91$ ,  $M_{PS}=3.10 \pm .98$ ), it can be said that the students' attitudes towards distance education are in a positive orientation from Undecided to Agree. However, it cannot be said that students find distance education activities sufficient.

**Table 3**

*Independent Sample T-Test Scores of The Students in The Pandemic Period and Post-Pandemic Students*

	N	Mean	Sd	df	t	p
PD	524	3.07	.91	1101.85	-.64	.51
PS	1095	3.10	.98			

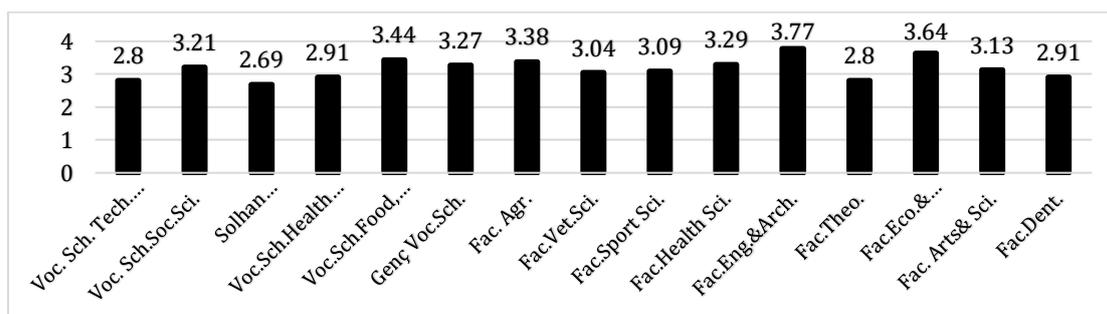
Independent samples t-test was used to compare students' distance education evaluation scores during and after the pandemic. The test indicates no statistically significant difference between the student scores received before and after the pandemic [ $t(1101.85)=-.64$ ,  $p>.05$ ].

### 3.2. RQ2. Examining the Distance Education Evaluation Scores of the Students According to the Unit (Faculty/Vocational School) Factor

The differences in students' distance education evaluation scores between the units were analyzed. As shown in Figure 1, the mean scores between the units were between 2.69 and 3.77. The Faculty of Engineering and Architecture has the highest value, whereas the Solhan Health Services Vocational School has the lowest value.

**Figure 1**

*Mean Scores of Distance Education Evaluation Scores by Units*



One-way analysis of variance (ANOVA) was used to compare the distance education evaluation scores of students studying in 15 different units at Bingöl University. A statistically significant difference was found in these units' distance education evaluation scores [ $F(14,1604)=7.49, p<.05$ ].

**Table 4**

*ANOVA Analysis of Evaluation Scores Between Units*

	Sum of Squares	df	Mean Square	F	p
Between Groups	90.93	14	6.49	7.49	.00
Within Groups	1391.69	1604	.86		
Total	1482.62	1618			

In the post-hoc analysis (Tukey's HSD), which determined which units had significant differences, significant differences were found between many units. Some are listed Technical Sciences Vocational School- Faculty of Engineering and Architecture, Social Sciences Vocational School- Health Services Vocational School, Solhan Health Services Vocational School- Vocational School of Food, Agriculture and Livestock.

**3.3. RQ3. Examining the Distance Education Evaluation Scores of the Students According to Their Education Level (Bachelor/Associate Degree)**

52.7% (N=854) of the students participating in the scale (N=1619) are Associate degree students, and 47.3% (N=765) are bachelor students. According to descriptive statistics, the mean score of bachelor students ( $3.17\pm.97$ ) is higher than that of associate degree students ( $3.02\pm.94$ ).

**Table 5**

*Independent Sample T-Test Scores of The Students Education Level*

	N	Mean	Sd	df	t	p
Associate degree	854	3.02	.94	1617	-3.02	.00
Bachelor	765	3.17	.97			

An Independent sample t-test was used to compare associate degree and bachelor's students' distance education evaluation scores. The test's findings revealed a statistically significant difference between groups [ $t(1617)=-3.02, p<.05$ ]. Although the magnitude of the difference between the means [*Mean Difference (MD)*=-.14, 95% Confidence Interval ( $\mu$ ): from -.24 to -.05] is significant, the percentage of variance explained is quite low [Eta Square( $\eta^2$ )=.005].

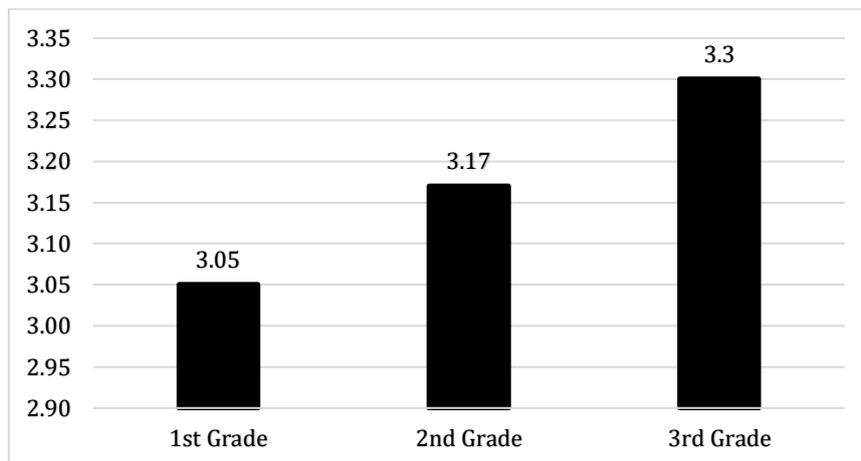
**3.4. RQ4. Examination of Students' Distance Education Evaluation Scores According to Grade Level**

Of the students (N=1619) who participated in the scale during and after the pandemic period, 75.1% (N=1216) were in the 1<sup>st</sup> grade, 14.1% (N=229) in the 2<sup>nd</sup> grade, and 10.7% (N=174) in the 3<sup>rd</sup> grade. A single-factor analysis of variance was conducted to examine the effect of the class in which the students were registered on the distance education evaluation.

**Table 6***Mean Scores of Distance Education Evaluation Scores by Grade*

	<b>N</b>	<b>Mean</b>	<b>Sd</b>	<b>df1</b>	<b>df2</b>	<b>F</b>	<b>p</b>
1 <sup>st</sup>	1216	3.05	.93	2	1616	6.18	.00
2 <sup>nd</sup>	229	3.17	1.11				
3 <sup>rd</sup>	174	3.30	.94				
Total	1619	3.00	.96				

Participants were divided into three groups according to their class (1<sup>st</sup> grade:3.05±.93, 2<sup>nd</sup> grade:3.17±1.11, 3<sup>rd</sup> grade:3.30±.94). A statistically significant difference was found in these classes' distance education evaluation scores [ $F(2,1616)=6.18, p<.05$ ]. Although there was a statistically significant difference between the groups, the percentage of the calculated variance was quite low ( $\eta^2=.008$ ). A post-hoc analysis (Tukey's HSD) determined which classes differed significantly. From this analysis, it was observed that the difference between the 1<sup>st</sup> grade and the 3<sup>rd</sup> grade was significant. Figure 2 shows the mean scores of the classes. As can be seen in Figure 2, distance education evaluation scores increased towards the upper classes.

**Figure 2***Mean Scores of Distance Education Evaluation Scores by Class*

### **3.5. RQ5. Examining the Distance Education Evaluation Scores of the Students According to the Gender Factor**

Of the 1619 students who participated in the scale, 39.5% (N=639) were male, and 60.5% (N=980) were female. According to descriptive statistics, the evaluation score of male students ( $M=3.23\pm1.0$ ) is higher than that of female students ( $M=3.00\pm.92$ ).

**Table 7***Independent Sample T-Test Scores of The Student's Gender*

<b>Gender</b>	<b>N</b>	<b>Mean</b>	<b>Sd</b>	<b>df</b>	<b>t</b>	<b>p</b>
Male	639	3.23	1.00	1287.47	4.52	.00
Female	980	3.00	.92			

To compare the evaluation results of male and female online education students, an independent samples t-test was used. The test results found a statistically significant difference between the genders [ $t(1287.47)=4.52, p<.05$ ]. Although the differences between the means were significant ( $MD=.22, 95\% \mu$ : from .13 to .32), the percentage of variance explained was small ( $\eta^2=.01$ ). In other words, it can be said that only 1% of the variance in distance education evaluation scores by gender is explained.

### 3.6. RQ6. Examining the Distance Education Evaluation Scores of the Students According to the Age Factor

Since no questions were asked about the age group of the students in the scale applied to the students in the pandemic period, only the data of the post-pandemic period students were evaluated in this section. The number of students' mean and standard deviation values according to the determined age groups are given in Table 8.

**Table 8**

*Distribution of Distance Education Activities Evaluation Scores by Age*

	N	Mean	Sd	df1	df2	F	p
20<	551	3.06	0.97				
21..25	484	3.12	0.99				
26..30	27	2.86	1.07				
31..35	15	3.80	0.90	4	1090	4.05	.00
35>	18	3.64	0.64				
Total	1095	3.10	0.98				

The impact of online education evaluation score distribution by age was investigated using a single-factor analysis of variance. In according line with the participants' ages, the participants were divided into five categories. For these age groups, there was a statistically significant difference in the online education evaluation scores at the .05 level [ $F(4,1090)=4.05, p<.05$ ]. Although statistically significant, the actual difference in mean scores between groups appears to be quite small. The effect size calculated using eta-square was found to be .02. Post-Hoc comparisons using Tukey's HSD test indicate that the 31-35 age group significantly differs from the 20 and underage groups and the 26-30 age groups.

As seen in Table 8, approximately half of the students (50.3%) were 20 or younger, while the other half (49.7%) were over 20 years old. For this reason, it was thought that it would be more appropriate to evaluate the students by dividing them into two groups. According to the independent samples t-test results, it was observed that there was a statistically significant difference between the students aged 20 and under ( $3.06\pm.97$ ) and the mean score of the students over the age of 20 ( $3.15\pm.99$ ) ( $t(1093)=-1.50, p>.05$ ). Although the size of the differences between the means ( $MD=-.089, 95\% \mu$ : from -.21 to .027) was significant, the percentage of variance explained was quite small ( $\eta^2=.002$ ).

### 3.7. RQ7. Examining the Distance Education Evaluation Scores of the Students According to Their Distance Education Experience

There was no question about the student's experience on the scale during the pandemic period. In this section, only the data of the post-pandemic students were evaluated. After the pandemic, 74.4% of the students (N=1095) who participated in the scale answered Yes (N=815), and 25.4% answered No (N=280). According to descriptive statistics, the mean score of the

students with distance education experience ( $3.17 \pm .98$ ) was higher than that of those without experience ( $2.90 \pm .96$ ).

**Table 9**

*Distribution of Distance Education Activities Evaluation Scores by Experience*

Experience	N	Mean	Sd	df	t	p
Yes	815	3.17	.98	1093	4.02	.00
No	280	2.90	.96			

To compare the evaluation results of students with and without prior experience with online education classes, an independent samples t-test was used. The exam findings showed a statistically significant difference between the scores of students who had experience and those who did not [ $t(1093) = 4.02, p < .05$ ]. Although the size of the differences between the means ( $MD = .27, 95\% \mu: \text{from } .14 \text{ to } .40$ ) was significant, the percentage of variance explained was quite small ( $\eta^2 = .01$ ).

## DISCUSSION

In this study, which was conducted to evaluate the distance education activities of university students during the pandemic period and after the pandemic, comparisons were made based on various variables. For this purpose, the distance education evaluation scale was applied to 524 students during the pandemic and 1095 students post-pandemic. The results of this scale are given below, respectively.

The scale was applied to 1619 students within the scope of determining the qualifications for distance education activities. Pandemic period ( $M_{PD} = 3.07 \pm .91$ ), post-pandemic ( $M_{PS} = 3.10 \pm .98$ ) and overall mean ( $3.09 \pm .96$ ) scores of the scale applied were calculated. It can be said that the mean score of scale in the pandemic period and the mean score of scale in the post-pandemic are close values. It can be explained by the fact that the independent sample t-test results used in the analysis show no substantial difference between the groups. In the study conducted by Karadağ and Yücel (2020), it was seen that the distance education evaluation scores of the students during the pandemic period were between 2.63 and 3.73.

Furthermore, in their study, Kolcu et al. (2020) demonstrated that students were generally satisfied with and quickly adapted to remote learning during the pandemic. Another study investigated the perceptions of students and faculty members regarding the effects of remote education. The study revealed that most respondents considered remote learning an excellent alternative to traditional instruction (Yazıbaşı et al., 2021).

Students from 15 distinct units (Faculty/Vocational School) participated in a one-way analysis of variance to compare the differences between the scale's units. Significant differences were observed among many units. When the mean scores of the units are examined, it is seen that the Faculty of Engineering and Architecture has the highest value, and Solhan Health Services Vocational School has the lowest value. The relationship between the university placement scores of the units can explain this situation. In the literature, it was observed that there was no significant difference between the classroom education and mathematics education departments in which the application was carried out in the studies conducted by Denge and Sulak (2020). Similarly, Başar et al. (2019), Doğan (2020) and Karadağ and Yücel (2020) also found significant differences between departments or fields. These studies demonstrate that students receiving education in different departments or fields may experience variations in academic achievement. The findings in the literature assist us in understanding the differences that may arise among students studying in different departments or fields and the sources of these differences.

The students enrolled in nine bachelor and six associate degree programs were investigated to see if there was a statistically significant difference between the online education evaluation scores for both groups. The independent groups t-test, used in this situation, revealed a substantial difference in favour of bachelor students. This situation can be explained by the fact that similar to the difference between units, the placement scores of faculties in university examinations are higher than those of vocational schools. Similarly, Korkmaz et al. (2018) also revealed a significant difference between bachelor and associate degree students in favour of bachelor students.

Participation in the study's distance education evaluation measure was open to students in various grade levels. The significant variation in grade levels between groups was found using a one-factor analysis of variance. This analysis revealed a statistically significant difference between the first and third classes. Additionally, it was noted that the online education evaluation scores increased as the grade level arose. Due to the pandemic's effects, senior students have experience with distance learning, which helps to explain the current scenario.

Similarly, Dursun et al. (2021) and Yılmaz (2020) also observed a significant difference between the groups according to grade levels. In the study conducted by Karadağ and Yücel (2020), a significant difference was found in the scores of "Higher Education Council Satisfaction" and "University and Faculty Management Satisfaction" according to the grade level variable. However, no significant difference was found in total satisfaction scores according to the grade level variable.

Similarly, 39.5% of the students participating in the survey were boys, while 60.5% were girls. When evaluated in terms of both genders, it was seen that the mean scale score for male students was higher than that for female students. As a result of the independent groups t-test applied, this difference in favour of male students was found to be significant. Similarly, Doğan (2020), Gören et al. (2020) and Sayan (2020) also stated that distance education evaluation scores make a significant difference in terms of gender. However, Bircan et al. (2018), Düz and Sulak (2020), Hasançebi et al. (2022), Karadağ and Yücel (2020) and Yılmaz (2020) no significant difference observed between the groups in terms of gender. According to these findings, gender demonstrates an influence on students' performance. For instance, these results suggest that gender may create variations in assessment and evaluation processes in remote education or potentially impact academic achievement in specific domains.

Students who participated in the scale in the post-pandemic period were divided into five different age groups and filled out the scale. The difference between these age categories that was statistically significant was discovered using a single-factor analysis of variance. As a result, the analysis showed a significant difference among the age group of 31-35 years, the age group 20 and below and the age group 26-30. Again, it was observed that there was a significant difference between the evaluation scores of the students aged 20 and under and those over the age of 20, which constitute half of the sample, in favour of those over the age of 20. For this reason, it can be said that as age increases, distance education evaluation scores increase. In the study carried out by Sayan (2020) in the literature, it was seen that the distance education evaluation scores of the instructors were evaluated as under 40 years old and over 40 years old. In this evaluation, it was observed that there was a significant difference between the groups. In the study by Moçoşoğlu and Kaya (2020), there were no significant differences between the groups in comparing teachers' distance education attitudes by age.

Finally, the mean scores were compared according to the distance education experiences of the students after the pandemic. In this comparison, 74.4% (N=815) of the students stated that they had previous distance education experience, while 25.4% (N=280) stated that they were not experienced in distance education. As a result of the independent groups t-test, significant differences emerged between the groups. People not experienced in distance education may be

prejudiced against the teaching activity that takes place in this way (Telli & Altun, 2020). Due to this situation, distance education scores may be lower than experienced ones. The higher distance education scores of experienced people can explain this. It is thought that the evaluation scores of the individuals may increase with the increase in their distance education experience.

The study provides significant insights on how online education should be implemented in the future, considering factors such as course type, faculty, age, and more. Based on the findings obtained in the study, a detailed recommendation is presented regarding the future applications of online education.

- *Distance learning experience:* The study demonstrates a positive impact of distance learning experience on student performance. It has been observed that students with distance learning experience obtained higher assessment scores compared to those without experience. Therefore, future online education practices should aim to enhance student performance by providing them with more opportunities for distance learning experiences.
- *Faculty/Department Variations:* The study reveals significant variations in scores derived from online education assessments among different faculties and departments. Some faculties or departments received higher assessment scores compared to others. This finding suggests that different departments may have different teaching approaches or resources tailored to the needs of their students. In the future, faculties and departments should design online education programs that cater to their students' specific requirements and needs.
- *Class level differences:* The study highlights meaningful differences in online assessment performance based on class levels. Final-year students were found to have higher assessment scores compared to students in other class levels. This indicates that students improve their adaptation to online learning and gain more experience over time. Future online education practices should provide students at all class levels with more opportunities for experience and practice.
- *Gender differences:* The study indicates that gender influences students' achievements in online education assessment practices. It was found that male students obtained higher assessment scores than female students. Although the exact reasons for this difference are not fully explained, factors such as gender-based learning preferences, students' learning strategies, or varying levels of participation may be influential. Future online education practices should consider gender differences and create an environment where both genders can thrive by offering diverse learning environments and methods.

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## GENİŞLETİLMİŞ ÖZ

### Giriş

Tüm dünyada olduğu gibi ülkemizde de COVID-19 pandemisiyle beraber tüm eğitim-öğretim kademelerinde yüz yüze eğitimden uzaktan öğretime geçme zorunluluğu ortaya çıkmıştır (UNESCO, 2020). Salgın döneminde ortaya çıkan uzaktan öğretim faaliyetleri geleneksel uzaktan öğretim faaliyetleriyle benzer olarak algılanmasına rağmen, her iki süreç birbirinden farklıdır (Bozkurt, 2020). Kriz sırasında ortaya çıkan uzaktan öğretim faaliyetleri acil uzaktan öğretim olarak tanımlanmıştır (Hodges vd., 2020). Bu kavram pandemi ile bir tercih olmaktan çıkıp zorunluluk durumuna gelmiştir.

Son yıllardaki yangın, sel, salgın gibi afetlerin halk sağlığı ve güvenliği noktasında endişelere yol açtığı düşünüldüğünde salgın sonrasında da acil uzaktan öğrenme uygulamalarının devam etmesinin gerekli ve önemli olduğu söylenebilir (Samson, 2020). Nitekim ülkemizde 6 Şubat 2023 tarihinde meydana gelen ve asrın felaketi olarak tanımlanan 7,7 ve 7,6 şiddetindeki depremler, benzeri görülmemiş büyüklükte bir afet meydana getirmiştir. Bu nedenle Kahramanmaraş merkezli deprem afetinin ülke genelindeki etkilerinden dolayı Yükseköğretim Kurulu tarafından 2022-2023 eğitim ve öğretim yılı bahar döneminin uzaktan öğretim yoluyla tamamlanmasının uygun olduğuna karar verilmiştir (YÖK, 2023). Ayrıca çalışma farklı dönemlerde yürütülen uzaktan öğretim faaliyetlerinin öğrenim görülen alan, öğrenim seviyesi, yaş, cinsiyet, daha önce uzaktan öğretim deneyim durumu gibi değişkenler açısından farklılaşma olup olmadığını tespit etme açısından önem arz etmektedir. Bu kapsamda çalışmada pandemi dönemi ve pandemi sonrası üniversite öğrencilerinin uzaktan öğretim faaliyetlerinin değerlendirilmesi amaçlanmıştır.

### Yöntem

Pandemi dönemi ve pandemi sonrası üniversite öğrencilerinin uzaktan öğretim faaliyetlerinin değerlendirilmesi kapsamında, nicel araştırma yöntemlerinden biri olan tarama modeli kullanılmıştır. Tarama modeli bir grubun belirli özelliklerini belirlemek için verilerin toplanmasını amaçlayan çalışmalarda kullanılmaktadır (Büyüköztürk vd., 2018). Bu doğrultuda araştırma örneklemini, Bingöl Üniversitesine 2021-2022 eğitim ve öğretim yılında kayıt yapan 1. sınıf öğrencileri (pandemi dönemi öğrencileri) ile 2022-2023 eğitim ve öğretim yılı güz döneminde aktif olan 1, 2 ve 3. sınıf öğrencileri (pandemi sonrası dönem öğrencileri) oluşturmaktadır. Çalışma kapsamında Özkul vd. (2020) tarafından geliştirilen “Uzaktan Eğitim Değerlendirme Ölçeği” ölçek kullanılmıştır. Bu ölçek, teknik ve öğrenme süreci olmak üzere iki faktöre sahiptir. Bu ölçek toplam 15 maddeden oluşmaktadır. Özkul vd. (2020)’ye göre ölçeğin kabul edilebilir Cronbach Alfa değeri “0,96” ile “0,89” arasındadır. Bu çalışmada uygulama sonrası ölçeğin güvenilirliği “0,95” olarak hesaplanmıştır. Verilerin analiz edilmesinde hem betimsel hem de kestirimsel yöntemler kullanılmıştır. Bu amaçla, verilere ait tanımlayıcı istatistikler incelenmiştir. Ayrıca grupları kıyaslamak için çeşitli istatistiksel teknikler uygulanmıştır.

## **Sonuç**

Uzaktan öğretim faaliyetlerinin yeterliliklerini belirleme kapsamında %32.4'ü (N=524) pandemi dönemi, %67.6'sı (N=1095) ise pandemi sonrası olmak üzere toplam 1619 öğrenciye ölçek uygulanmıştır. Uygulanan bağımsız örneklem t-testine göre pandemi dönemi ve sonrası öğrencilerinden elde edilen puanlar arasında istatistiksel olarak anlamlı bir fark bulunmamaktadır. Ayrıca 15 farklı birimde uygulanan ölçekte birimler arası farka bakılmıştır. ANOVA analizi sonucunda uzaktan öğretim değerlendirme puanlarında istatistiksel olarak anlamlı bir fark bulunmuştur. Ön lisans ve lisans öğrencileri arasındaki farkı tespit etmek için uygulanan bağımsız gruplar t-testi sonucunda ise gruplar arası anlamlı farklılık gözlenmiştir. Yine sınıf seviyesinde 1., 2. ve 3. sınıflar arasında yapılan ANOVA testi sonucunda gruplar arası anlamlı fark gözlenmiştir. Cinsiyetler arasında ise erkeklerin lehine anlamlı farklılık gözlenmiştir. Yaş gruplarına göre yapılan analizde ise yine gruplar arasında anlamlı farklılık gözlenmiştir. Son olarak ise uzaktan öğretim deneyimi olan öğrenciler ile bu konuda deneyimi olmayan öğrenciler kıyaslandığında deneyimi olan öğrencilerin uzaktan öğretim değerlendirme puanlarının daha yüksek olduğu ve gruplar arasında anlamlı farklılık olduğu gözlenmiştir.

## **Tartışma**

Sonuç olarak uzaktan öğretim değerlendirme puanları arasında yapılan inceleme sonucunda pandemic dönemi öğrencileri puanları ile pandemi sonrası öğrencilerin puanları arasında anlamlı farklılık gözlenmemiştir. Buna karşın uzaktan öğretim konusunda deneyimi olan öğrencilerin deneyimi olmayan öğrencilere göre daha yüksek puan aldıkları ve gruplar arasında anlamlı fark olduğu gözlenmiştir. Bu bağlamda kriz dönemlerini en az kayıpla atlama adına öğrencilerin bu konuda deneyim kazanmalarının sağlanması önemli görülebilir.